Empowered by Innovation

Express5800/ A2040b/A2020b/A2010b/A1040b Configuration Guide

Introduction

This document contains product and configuration information that will enable you to configure your system. The guide will ensure fast and proper configuration of your NEC Express5800 server.

The available models depend on sales regions. For details, please contact your region's sales representative.

April 2015
Rev. 8.0
NEC Corporation

Contents

TECHNICAL SPECIFICATION **4**
NEC Express5800/A2040b (including COPT supported model) **4**
NEC Express5800/A2020b **5**
NEC Express5800/A2010b **6**
NEC Express5800/A1040b **7**
EXTERNAL VIEWS **8**
Front and Rear Views **8**
Dimensions (mm) **10**
A2040b/A2020b/A2010b 10
A1040b 10
CONFIGURATION DIAGRAM **11**
A2040b **11**
A2020b **11**
A2010b **12**
A1040b **12**
EXPANSION SLOT **13**
SERVER CONFIGURATION **14**
1 Base Models **14**
1.1 A2040b 14
1.2 A2020b 15
1.3 A2010b 16
1.4 A1040b 17
1.5 COPT 18
2 CPU **19**
A2040b (min. 2CPU / max. 4CPU)/ A1040b (min. 1CPU / max. 4CPU) 19
3 Memory **21**
3.1 Memory Riser Card 21
3.2 Memory Configuration 22
Memory Clock 28
Maximum Memory Capacity 29
4 Internal Disk Drives **30**
4.1 RAID Configuration 30
4.2 Internal Drive Configuration 32
200GB SSD (*CTO*) **32**
400GB SSD (*CTO*) **32**
5 Optical Drive **36**
6 PCI Card **37**
6.1 Network Interface Controller 37
6.2 Using iSCSI (for data usage) 39
6.3 External Storage Controller 40
6.4 PCIe SSD 42
7 Other Add-in Components **43**
7.1 Power Supply Unit 43
7.2 Redundant Fan Kit 44
7.3 Trusted Platform Module Kit 44
7.4 Internal Flash Memory 45
8 Add-on Components **46**
8.1 17-inch LCD Console Unit 46

8.2 KVM Switch 47
8.3 Front Bezel 48
8.4 Cable Arm 49
8.5 Management Console Specifications 51
REFERENCES 52
■CPU 52
■Memory 52
■Internal Drive 58
■Connection to RDX (USB) by Device Expansion Unit 60
■Server Management 61
■PCI Slot: Available Slots and Installation Limitations 62
■PCI Card: Priority/Order of Installation 66
■RAS Feature Matrix (per OS) 70
Copyright Notice and Liability Disclaimer 73
REVISION HISTORY 74

Technical Specification

NEC Express5800/A2040b (including COPT supported model)

Key Features

- 4U/up to 4way high performance with the latest Intel® Xeon® processor E7-8800v2, E7-4800v2 product family
- Up to 4TB of memory capacity, supporting high speed and energy efficient DDR3L01600 memory
- Redundant resources; service processors, clock and core I/O components
- Capacity Optimization (COPT) supported model separately available in line-up for CPU resource optimization
- Up to 8 2.5-inch HDD/SSD
- High energy efficiency with 80 PLUS(RI Platinum certified power supply unit

Model Name			Express5800/A2040b							
Product Code	Base Unit		NE3400-040F							
	Base Unit (COPT)		NE3400-041F							
	CPU		NE3301-H001F	NE3301-H002F	NE3301-H003F	NE3301-H004F	NE3301-H005F	NE3301-H006F	NE3301-H007F	NE3301-H008F
CPU	Processor		Intel® Xeon® Processor E7-4890 v2	Intel® Xeon® Processor E7-4870v2 *1	Intel® Xeon® Processor E7-4860v2	Intel® Xeon® Processor E7-4830v2	Intel® Xeon® Processor E7-4820v2	Intel® Xeon® Processor E7-4809v2 *1	Intel® Xeon® Processor E7-8891v2 *1	Intel® Xeon® Processor E7-8893v2
	Clock Speed		2.80GHz	2.30GHz	2.60GHz	2.20GHz	2.00GHz	1.90GHz	3.20GHz	3.40GHz
	Number of CPUs, min./max.		2/4							
	3rd Cache		37.5MB	30MB		20MB	16MB	12MB	37.5MB	
	Number of Cores (C) / Thread (T) per CPU		15C / 30T	15C/30T	12C/24T	10C / 20T	8C / 16T	6C / 12T	10C / 20T	6C / 12T
Chipset			Intel® C602-J chipset							
Memory	Capacity, standard/maximum		Not pre-installed Registered DIMM : 1TB (64x 16GB), Load Reduced DIMM : 4TB (64x 64GB)							
	Memory Module		DDR3L-1600 Registered DIMM (8/16GB), DDR3L-1600 Load Reduced DIMM (32GB), DDR3L-1333 Load Reduced DIMM (64GB)							
	Maximum Clock Speed		1600MHz					1333MHz	1600MHz	
	Error Check, Correction		ECC, x4 SDDC (Independence mode), DDDC (LockStep mode)							
	Rank Sparing		Supported							
	Memory Mirroring		Supported							
Auxiliary Storage Device	Hard Disk Drive	Internal (standard)	–							
		Internal (maximum)	HDD: 2.5-inch SAS 9.6TB (8x 1.2TB), SSD: 2.5-inch SAS 3.2TB (8x 400GB)							
		Hot Plug	Supported							
	Interface / RAID Level		SAS 6Gb/s : RAID 0/1/5/6/10/50/60							
	Optical Disk Drive		Internal drive (option) *2							
	FDD		-							
	Expansion Bay		-							
Expansion Slots	Supported Slots		14x PCI Express 3.0 (x8 lane, x8 socket) (Low profile, 167.6mm in length) 2x PCI Express 3.0 (x4 lane, x8 socket) (Low profile, 167.6mm in length)							
Graphics	Chip/Video RAM		Embedded in management controller chip / 8MB							
	Graphic Display / Resolution		16,770,000 colors: 640x480, 800x600, 1,024x768, 1,152x864, 1,280x1,024, 1,600x1,200							
Standard Interface			5x USB2.0 (3x front, 1x rear, 1x internal), 1x Analog RGB (Mini D-Sub 15-pin, 1x front), 1x SUV（2x USB2.0, 1x serial (RS-232C/D-Sub 9-pin), 1x VGA (Mini D-Sub 15-pin)) 2x Management LAN connector (1000BASE-T/100BASE-TX/10BASE-T, RJ-45, 2x rear)							
Redundant Power Supply			Supported (hot-plug available)							
Redundant Fan			Supported (standard, hot-plug available)							
External Dimensions (width x depth x height)			443.0mm x 719.3mm x 174.5mm (w/o protuberance/inner rail) 482.6mm x 892.5mm x 175.5mm (including protuberance/inner rail)							
Weight (min.*3 / max.)			36kg / 55kg (including rail)							
Power Supply Unit			Not Pre-installed 800W or 1000W 80 PLUS® Platinum certified, hot plug (max. 4 units) AC100V/200V±10%, 50/60Hz±3Hz							
Power Consumption										
(100V max. configuration , 25℃ Standby)			1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W
(100V max. configuration , 25℃ High Load)			2296VA/2250W	2194VA/2150W	2194VA/2150W	2092VA/2050W	2092VA/2050W	2092VA/2050W	2296VA/2250W	2296VA/2250W
(100V max. configuration , Maximum)			2347VA/2300W	2245VA/2200W	2245VA/2200W	2143VA/2100W	2143VA/2100W	2143VA/2100W	2347VA/2300W	2347VA/2300W
(200V max. configuration , 25℃ Standby)			1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W
(200V max. configuration , 25℃ High Load)			2284VA/2238W	2182VA/2138W	2182VA/2138W	2080VA/2038W	2080VA/2038W	2080VA/2038W	2284VA/2238W	2284VA/2238W
(200V max. configuration , Maximum)			2335VA/2288W	2233VA/2188W	2233VA/2188W	2131VA/2088W	2131VA/2088W	2131VA/2088W	2335VA/2288W	2335VA/2288W
Calorific Value (KJ/h)			8280KJ/h	7920KJ/h	7920KJ/h	7560KJ/h	7560KJ/h	7560KJ/h	8280KJ/h	8280KJ/h
Environmental Requirements Temperature/Humidity			Operating: 10 to 40℃ / 50 to 104℉, 20 to 80% Non-Operating: -10 to 55℃ / 14 to 131℉, 20 to 80% (no condensation either when operating or when stored)							
Accessories			EXPRESSBUILDER (NEC ESMPRO Manager (Windows/Linux), NEC ESMPRO Agent, User's Guide (electronic document) included), Getting Started, SUV Cable, Rack Mount Kit							
Installed OS			-							
Supported OS			Microsoft® Windows Server® 2008 R2 Standard (SP1 or later), Microsoft® Windows Server® 2008 R2 Enterprise (SP1 or later), Microsoft® Windows Server® 2012 Standard, Microsoft® Windows Server® 2012 Datacenter Microsoft® Windows Server® 2012 R2 Standard *4, Microsoft® Windows Server® 2012 R2 Datacenter *4 Red Hat® Enterprise Linux® 6.4 or later (x86_64), Oracle® Linux 6.4/UEK R2 or later (x86_64) VMware® ESXi™ 5.1 Update 2, VMware® ESXi™ 5.1 Update 3 VMware® ESXi™ 5.5, VMware® ESXi™ 5.5 Update 1, VMware® ESXi™ 5.5 Update 2							

Remarks

Standby (shown in the Power Consumption) means the status before log-in at OS booted.

Note:

*1 CTO categorized item; lead time for delivery is different from other item
*2 Either internal DVD-ROM or DVD SuperMULTI should be installed for maintenance and/or OS re-installation purpose.
*3 Minimum configuration: 2x CPU, 2x DIMM, 0x HDD, 1x PCIe Card, 2x 800W Power Supply Unit
*4 Need to use "Support Kit" provided through web site in order to install at users site.

NEC Express5800/A2020b

Key Features

- 4U/2way server with high performance with the latest Intel® Xeon® processor E7-8800v2, E7-4800v2 product family
- Up to 4TB of memory capacity, supporting high speed and energy efficient DDR3L01600 memory
- Superior I/O scalability: up to 16 PCI Express 3.0 slots
- Redundant resources; service processors, clock and core I/O components
- Up to 8 2.5-inch HDD/SSD
- High energy efficiency with 80 PLUS(RI Platinum certified power supply unit

Model Name			Express5800/A2020b							
Product Code	CPU		NE3400-021F	NE3400-022F	NE3400-023F	NE3400-024F	NE3400-025F	NE3400-026F	NE3400-027F	NE3400-028F
CPU	Processor		Intel® Xeon® Processor E7-4890 v2	Intel® Xeon® Processor E7-4870v2 *1	Intel® Xeon® Processor E7-4860v2	Intel® Xeon® Processor E7-4830v2	Intel® Xeon® Processor E7-4820v2	Intel® Xeon® Processor E7-4809v2 *1	Intel® Xeon® Processor E7-8891v2 *1	Intel® Xeon® Processor E7-8893v2
	Clock Speed		2.80GHz	2.30GHz	2.60GHz	2.20GHz	2.00GHz	1.90GHz	3.20GHz	3.40GHz
	Number of CPUs		2							
	3rd Cache		37.5MB	30MB		20MB	16MB	12MB	37.5MB	
	Number of Cores (C) / Thread (T) per CPU		15C / 30T	15C/30T	12C/24T	10C / 20T	8C / 16T	6C / 12T	10C / 20T	6C / 12T
Chipset			Intel® C602-J chipset							
Memory	Capacity, standard/maximum		Not pre-installed Registered DIMM : 1TB (64x 16GB), Load Reduced DIMM : 4TB (64x 64GB)							
	Memory Module		DDR3L-1600 Registered DIMM (8/16GB), DDR3L-1600 Load Reduced DIMM (32GB), DDR3L-1333 Load Reduced DIMM (64GB)							
	Maximum Clock Speed		1600MHz					1333MHz	1600MHz	
	Error Check, Correction		ECC, x4 SDDC (Independence mode), DDDC (LockStep mode)							
	Rank Sparing		Supported							
	Memory Mirroring		Supported							
Auxiliary Storage Device	Hard Disk Drive	Internal (standard)	–							
		Internal (maximum)	HDD: 2.5-inch SAS 9.6TB (8x 1.2TB), SSD: 2.5-inch SAS 3.2TB (8x 400GB)							
		Hot Plug	Supported							
	Interface / RAID Level		SAS 6Gb/s : RAID 0/1/5/6/10/50/60							
	Optical Disk Drive		Internal drive (option) *2							
	FDD		-							
	Expansion Bay		-							
Expansion Slots	Supported Slots		14x PCI Express 3.0 (x8 lane, x8 socket) (Low profile, 167.6mm in length) 2x PCI Express 3.0 (x4 lane, x8 socket) (Low profile, 167.6mm in length)							
Graphics	Chip/Video RAM		Embedded in management controller chip / 8MB							
	Graphic Display / Resolution		16,770,000 colors: 640x480, 800x600, 1,024x768, 1,152x864, 1,280x1,024, 1,600x1,200							
Standard Interface			5x USB2.0 (3x front, 1x rear, 1x internal), 1x Analog RGB (Mini D-Sub 15-pin, 1x front), 1x SUV（2x USB2.0, 1x serial (RS-232C/D-Sub 9-pin), 1x VGA (Mini D-Sub 15-pin)) 2x Management LAN connector (1000BASE-T/100BASE-TX/10BASE-T, RJ-45, 2x rear)							
Redundant Power Supply			Supported (hot-plug available)							
Redundant Fan			Supported (standard, hot-plug available)							
External Dimensions (width x depth x height)			443.0mm x 719.3mm x 174.5mm (w/o protuberance/inner rail) 482.6mm x 892.5mm x 175.5mm (including protuberance/inner rail)							
Weight (min.*3 / max.)			36kg / 55kg (including rail)							
Power Supply Unit			Not Pre-installed 800W or 1000W 80 PLUS® Platinum certified, hot plug (max. 4 units) AC100V/200V±10%, 50/60Hz±3Hz							
Power Consumption										
(100V max. configuration , 25℃ Standby)			1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W	1442VA/1413W
(100V max. configuration , 25℃ High Load)			2169VA/2126W	2088VA/2046W	2088VA/2046W	2006VA/1966W	2006VA/1966W	2006VA/1966W	2169VA/2126W	2169VA/2126W
(100V max. configuration , Maximum)			2220VA/2176W	2139VA/2096W	2139VA/2096W	2057VA/2016W	2057VA/2016W	2057VA/2016W	2220VA/2176W	2220VA/2176W
(200V max. configuration , 25℃ Standby)			1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W
(200V max. configuration , 25℃ High Load)			2157VA/2114W	2076VA/2034W	2076VA/2034W	1994VA/1954W	1994VA/1954W	1994VA/1954W	2157VA/2114W	2157VA/2114W
(200V max. configuration , Maximum)			2208VA/2164W	2127VA/2084W	2127VA/2084W	2045VA/2004W	2045VA/2004W	2045VA/2004W	2208VA/2164W	2208VA/2164W
Calorific Value (KJ/h)			7834KJ/h	7546KJ/h	7546KJ/h	7258KJ/h	7258KJ/h	7258KJ/h	7834KJ/h	7834KJ/h
Environmental Requirements Temperature/Humidity			Operating: 10 to 40℃ / 50 to 104℉, 20 to 80% Non-Operating: -10 to 55℃ / 14 to 131℉, 20 to 80% (no condensation either when operating or when stored)							
Accessories			EXPRESSBUILDER (NEC ESMPRO Manager (Windows/Linux), NEC ESMPRO Agent, User's Guide (electronic document) included), Getting Started, SUV Cable, Rack Mount Kit							
Installed OS			-							
Supported OS			Microsoft® Windows Server® 2008 R2 Standard (SP1 or later), Microsoft® Windows Server® 2008 R2 Enterprise (SP1 or later), Microsoft® Windows Server® 2012 Standard, Microsoft® Windows Server® 2012 Datacenter Microsoft® Windows Server® 2012 R2 Standard *4, Microsoft® Windows Server® 2012 R2 Datacenter *4 Red Hat® Enterprise Linux® 6.4 or later (x86_64), Oracle® Linux 6.4/UEK R2 or later (x86_64) VMware® ESXi™ 5.1 Update 2, VMware® ESXi™ 5.1 Update 3 VMware® ESXi™ 5.5, VMware® ESXi™ 5.5 Update 1, VMware® ESXi™ 5.5 Update 2							

Remarks

Standby (shown in the Power Consumption) means the status before log-in at OS booted.

Note:

*1 CTO categorized item; lead time for delivery is different from other item
*2 Either internal DVD-ROM or DVD SuperMULTI should be installed for maintenance and/or OS re-installation purpose.
*3 Minimum configuration: 2x CPU, 2x DIMM, 0x HDD, 1x PCIe Card, 2x 800W Power Supply Unit
*4 Need to use "Support Kit" provided through web site in order to install at users site.

NEC Express5800/A2010b

Key Features

- 4U/1way server with high performance with the latest Intel® Xeon® processor E7-8800v2, E7-4800v2 product family
- Up to 2TB of memory capacity, supporting high speed and energy efficient DDR3L01600 memory
- Superior I/O scalability: up to 9 PCI Express 3.0 slots
- Redundant resources; service processors, clock and core I/O components
- Up to 8 2.5-inch HDD/SSD
- High energy efficiency with 80 PLUS(RI Platinum certified power supply unit

Model Name		Express5800/A2010b							
Product Code	CPU	NE3400-031F	NE3400-032F	NE3400-033F	NE3400-034F	NE3400-035F	NE3400-036F	NE3400-037F	NE3400-038F
CPU	Processor	Intel® Xeon® Processor E7-4890 v2	Intel® Xeon® Processor E7-4870v2 *1	Intel® Xeon® Processor E7-4860v2	Intel® Xeon® Processor E7-4830v2	Intel® Xeon® Processor E7-4820v2	Intel® Xeon® Processor E7-4809v2 *1	Intel® Xeon® Processor E7-8891v2 *1	Intel® Xeon® Processor E7-8893v2
	Clock Speed	2.80GHz	2.30GHz	2.60GHz	2.20GHz	2.00GHz	1.90GHz	3.20GHz	3.40GHz
	Number of CPUs	1							
	3rd Cache	37.5MB	30MB		20MB	16MB	12MB	37.5MB	
	Number of Cores (C) / Thread (T) per CPU	15C / 30T	15C/30T	12C/24T	10C / 20T	8C / 16T	6C / 12T	10C / 20T	6C / 12T
Chipset		Intel® C602-J chipset							
Memory	Capacity, standard/maximum	Not pre-installed Registered DIMM : 512GB (32x 16GB), Load Reduced DIMM : 2TB (32x 64GB)							
	Memory Module	DDR3L-1600 Registered DIMM (8/16GB), DDR3L-1600 Load Reduced DIMM (32GB), DDR3L-1333 Load Reduced DIMM (64GB)							
	Maximum Clock Speed	1600MHz					1333MHz	1600MHz	
	Error Check, Correction	ECC, x4 SDDC (Independence mode), DDDC (LockStep mode)							
	Rank Sparing	Supported							
	Memory Mirroring	Supported							
Auxiliary Storage Device	Hard Disk Drive: Internal (standard)	–							
	Hard Disk Drive: Internal (maximum)	HDD: 2.5-inch SAS 9.6TB (8x 1.2TB), SSD: 2.5-inch SAS 3.2TB (8x 400GB)							
	Hard Disk Drive: Hot Plug	Supported							
	Interface / RAID Level	SAS 6Gb/s : RAID 0/1/5/6/10/50/60							
	Optical Disk Drive	Internaldrive (option) *2							
	FDD	-							
	Expansion Bay	-							
Expansion Slots	Supported Slots	7x PCI Express 3.0 (x8 lane, x8 socket) (Low profile, 167.6mm in length) 2x PCI Express 3.0 (x4 lane, x8 socket) (Low profile, 167.6mm in length)							
Graphics	Chip/Video RAM	Embedded in management controller chip / 8MB							
	Graphic Display / Resolution	16,770,000 colors: 640x480, 800x600, 1,024x768, 1,152x864, 1,280x1,024, 1,600x1,200							
Standard Interface		5x USB2.0 (3x front, 1x rear, 1x internal), 1x Analog RGB (Mini D-Sub 15-pin, 1x front), 1x SUV（2x USB2.0, 1x serial (RS-232C/D-Sub 9-pin), 1x VGA (Mini D-Sub 15-pin)) 2x Management LAN connector (1000BASE-T/100BASE-TX/10BASE-T, RJ-45, 2x rear)							
Redundant Power Supply		Supported (hot-plug available)							
Redundant Fan		Supported (standard, hot-plug available)							
External Dimensions (width x depth x height)		443.0mm x 719.3mm x 174.5mm (w/o protuberance/inner rail) 482.6mm x 892.5mm x 175.5mm (including protuberance/inner rail)							
Weight (min.*3 / max.)		36kg / 49kg (including rail)							
Power Supply Unit		Not Pre-installed 800W or 1000W 80 PLUS® Platinum certified, hot plug (max. 4 units) AC100V/200V±10%, 50/60Hz±3Hz							
Power Consumption									
(100V max. configuration , 25℃ Standby)		1033VA/1012W	1033VA/1012W	1033VA/1012W	1033VA/1012W	1033VA/1012W	1033VA/1012W	1033VA/1012W	1033VA/1012W
(100V max. configuration , 25℃ High Load)		1370VA/1343W	1330VA/1303W	1330VA/1303W	1289VA/1263W	1289VA/1263W	1289VA/1263W	1370VA/1343W	1370VA/1343W
(100V max. configuration , Maximum)		1421VA/1393W	1381VA/1353W	1381VA/1353W	1340VA/1313W	1340VA/1313W	1340VA/1313W	1421VA/1393W	1421VA/1393W
(200V max. configuration , 25℃ Standby)		1028VA/1007W	1028VA/1007W	1028VA/1007W	1028VA/1007W	1028VA/1007W	1028VA/1007W	1028VA/1007W	1028VA/1007W
(200V max. configuration , 25℃ High Load)		1363VA/1336W	1322VA/1296W	1322VA/1296W	1282VA/1256W	1282VA/1256W	1282VA/1256W	1363VA/1336W	1363VA/1336W
(200V max. configuration , Maximum)		1414VA/1386W	1373VA/1346W	1373VA/1346W	1333VA/1306W	1333VA/1306W	1333VA/1306W	1414VA/1386W	1414VA/1386W
Calorific Value (KJ/h)		5015KJ/ h	4871KJ/ h	4871KJ/ h	4727KJ/ h	4727KJ/ h	4727KJ/ h	5015KJ/ h	5015KJ/ h
Environmental Requirements Temperature/Humidity		Operating: 10 to 40℃ / 50 to 104℉, 20 to 80% Non-Operating: -10 to 55℃ / 14 to 131℉, 20 to 80% (no condensation either when operating or when stored)							
Accessories		EXPRESSBUILDER (NEC ESMPRO Manager (Windows/Linux), NEC ESMPRO Agent, User's Guide (electronic document) included), Getting Started, SUV Cable, Rack Mount Kit							
Installed OS		-							
Supported OS		Microsoft® Windows Server® 2008 R2 Standard (SP1 or later), Microsoft® Windows Server® 2008 R2 Enterprise (SP1 or later), Microsoft® Windows Server® 2012 Standard, Microsoft® Windows Server® 2012 Datacenter Microsoft® Windows Server® 2012 R2 Standard *4, Microsoft® Windows Server® 2012 R2 Datacenter *4 Red Hat® Enterprise Linux® 6.4 or later (x86_64), Oracle® Linux 6.4/UEK R2 or later (x86_64) VMware® ESXi™ 5.1 Update 2, VMware® ESXi™ 5.1 Update 3 VMware® ESXi™ 5.5, VMware® ESXi™ 5.5 Update 1, VMware® ESXi™ 5.5 Update 2							

Remarks

Standby (shown in the Power Consumption) means the status before log-in at OS booted.

Note:

*1 CTO categorized item; lead time for delivery is different from other item
*2 Either internal DVD-ROM or DVD SuperMULTI should be installed for maintenance and/or OS re-installation purpose.
*3 Minimum configuration: 1x CPU, 2x DIMM, 0x HDD, 1x PCIe Card, 2x 800W Power Supply Unit
*4 Need to use "Support Kit" provided through web site in order to install at users site.

NEC Express5800/A1040b

Key Features

- 4U/up to 4way server with high performance with the latest Intel® Xeon® processor E7-8800v2, E7-4800v2 product family
- Up to 4TB of memory capacity, supporting high speed and energy efficient DDR3L01600 memory
- Up to 8 2.5-inch HDD/SSD
- High energy efficiency with 80 PLUS(RI Platinum certified power supply unit

Model Name			Express5800/A1040b							
Product Code	Base Unit		NE3300-040F							
	CPU		NE3301-H001F	NE3301-H002F	NE3301-H003F	NE3301-H004F	NE3301-H005F	NE3301-H006F	NE3301-H007F	NE3301-H008F
CPU	Processor		Intel® Xeon® Processor E7-4890 v2	Intel® Xeon® Processor E7-4870v2 *1	Intel® Xeon® Processor E7-4860v2	Intel® Xeon® Processor E7-4830v2	Intel® Xeon® Processor E7-4820v2	Intel® Xeon® Processor E7-4809v2 *1	Intel® Xeon® Processor E7-8891v2 *1	Intel® Xeon® Processor E7-8893v2
	Clock Speed		2.80GHz	2.30GHz	2.60GHz	2.20GHz	2.00GHz	1.90GHz	3.20GHz	3.40GHz
	Number of CPUs, min./max.		1/4							
	3rd Cache		37.5MB	30MB		20MB	16MB	12MB	37.5MB	
	Number of Cores (C) / Thread (T) per CPU		15C / 30T	15C/30T	12C/24T	10C / 20T	8C / 16T	6C / 12T	10C / 20T	6C / 12T
Chipset			Intel® C602-J chipset							
Memory	Capacity, standard/maximum		Not pre-installed Registered DIMM : 1TB (64x 16GB), Load Reduced DIMM : 4TB (64x 64GB)							
	Memory Module		DDR3L-1600 Registered DIMM (8/16GB), DDR3L-1600 Load Reduced DIMM (32GB), DDR3L-1333 Load Reduced DIMM (64GB)							
	Maximum Clock Speed		1600MHz					1333MHz	1600MHz	
	Error Check, Correction		ECC, x4 SDDC (Independence mode), DDDC (LockStep mode)							
	Rank Sparing		Supported							
	Memory Mirroring		Supported							
Auxiliary Storage Device	Hard Disk Drive	Internal (standard)	–							
		Internal (maximum)	HDD: 2.5-inch SAS 9.6TB (8x 1.2TB), SSD: 2.5-inch SAS 3.2TB (8x 400GB)							
		Hot Plug	Supported							
	Interface / RAID Level		SAS 6Gb/s : RAID 0/1/5/6/10/50/60							
	Optical Disk Drive		Internal drive (option) *2							
	FDD		-							
	Expansion Bay		-							
Expansion Slots	Supported Slots		14x PCI Express 3.0 (x8 lane, x8 socket) (Low profile, 167.6mm in length) 2x PCI Express 3.0 (x4 lane, x8 socket) (Low profile, 167.6mm in length)							
Graphics	Chip/Video RAM		Embedded in management controller chip / 8MB							
	Graphic Display / Resolution		16,770,000 colors: 640x480, 800x600, 1,024x768, 1,152x864, 1,280x1,024, 1,600x1,200							
Standard Interface			5x USB2.0 (3x front, 1x rear, 1x internal), 1x Analog RGB (Mini D-Sub 15-pin, 1x front), 1x SUV（2x USB2.0, 1x serial (RS-232C/D-Sub 9-pin), 1x VGA (Mini D-Sub 15-pin)) 1x Management LAN connector (1000BASE-T/100BASE-TX/10BASE-T, RJ-45, 1x rear)							
Redundant Power Supply			Supported (hot-plug available)							
Redundant Fan			Supported (standard, hot-plug available)							
External Dimensions (width x depth x height)			443.0mm x 719.3mm x 174.5mm (w/o protuberance/inner rail) 482.6mm x 892.5mm x 175.5mm (including protuberance/inner rail)							
Weight (min.*3 / max.)			35kg / 54kg (including rail)							
Power Supply Unit			Not Pre-installed 800W or 1000W 80 PLUS® Platinum certified, hot plug (max. 4 units) AC100V/200V±10%, 50/60Hz±3Hz							
Power Consumption										
(100V max. configuration , 25℃ Standby)			1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W	1435VA/1406W
(100V max. configuration , 25℃ High Load)			2288VA/2242W	2186VA/2142W	2186VA/2142W	2084VA/2042W	2084VA/2042W	2084VA/2042W	2288VA/2242W	2288VA/2242W
(100V max. configuration , Maximum)			2339VA/2292W	2237VA/2192W	2237VA/2192W	2135VA/2092W	2135VA/2092W	2135VA/2092W	2339VA/2292W	2339VA/2292W
(200V max. configuration , 25℃ Standby)			1428VA/1399W	1428VA/1399W	1428VA/1399W	1428VA/1399W	1428VA/1399W	1428VA/1399W	1428VA/1399W	1428VA/1399W
(200V max. configuration , 25℃ High Load)			2277VA/2231W	2174VA/2131W	2174VA/2131W	2072VA/2031W	2072VA/2031W	2072VA/2031W	2277VA/2231W	2277VA/2231W
(200V max. configuration , Maximum)			2328VA/2281W	2226VA/2181W	2226VA/2181W	2123VA/2081W	2123VA/2081W	2123VA/2081W	2328VA/2281W	2328VA/2281W
Calorific Value (KJ/h)			8251KJ/h	7891KJ/h	7891KJ/h	7531KJ/h	7531KJ/h	7531KJ/h	8251KJ/ h	8251KJ/ h
Environmental Requirements Temperature/Humidity			Operating: 10 to 40℃ / 50 to 104℉, 20 to 80% Non-Operating: -10 to 55℃ / 14 to 131℉, 20 to 80% (no condensation either when operating or when stored)							
Accessories			EXPRESSBUILDER (NEC ESMPRO Manager (Windows/Linux), NEC ESMPRO Agent, User's Guide (electronic document) included), Getting Started, SUV Cable, Rack Mount Kit							
Installed OS			-							
Supported OS			Microsoft® Windows Server® 2008 R2 Standard (SP1 or later), Microsoft® Windows Server® 2008 R2 Enterprise (SP1 or later), Microsoft® Windows Server® 2012 Standard, Microsoft® Windows Server® 2012 Datacenter Microsoft® Windows Server® 2012 R2 Standard *4, Microsoft® Windows Server® 2012 R2 Datacenter *4 Red Hat® Enterprise Linux® 6.4 or later (x86_64), Oracle® Linux 6.4/UEK R2 or later (x86_64) VMware® ESXi™ 5.1 Update 2, VMware® ESXi™ 5.1 Update 3 VMware® ESXi™ 5.5, VMware® ESXi™ 5.5 Update 1, VMware® ESXi™ 5.5 Update 2							

Remarks

Standby (shown in the Power Consumption) means the status before log-in at OS booted.

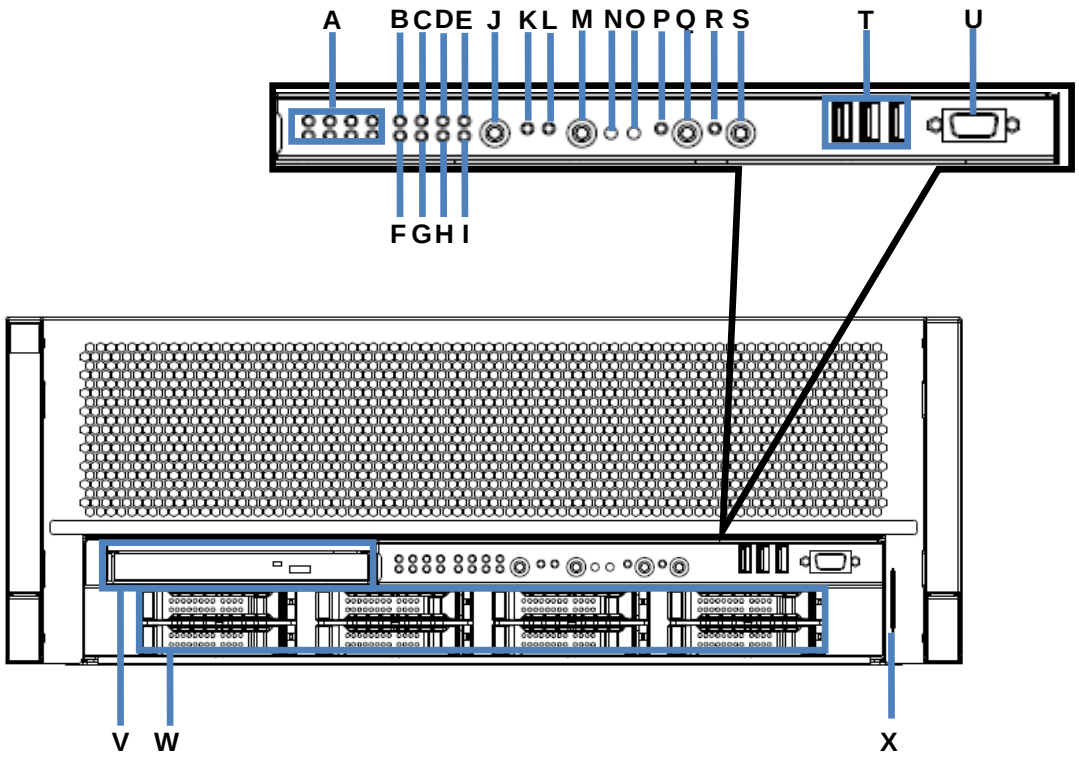
Note:

*1 CTO categorized item; lead time for delivery is different from other item
*2 Either internal DVD-ROM or DVD SuperMULTI should be installed for maintenance and/or OS re-installation purpose.
*3 Minimum configuration: 1x CPU, 2x DIMM, 0x HDD, 1x PCIe Card, 2x 1000W Power Supply Unit
*4 Need to use "Support Kit" provided through web site in order to install at users site.

External Views

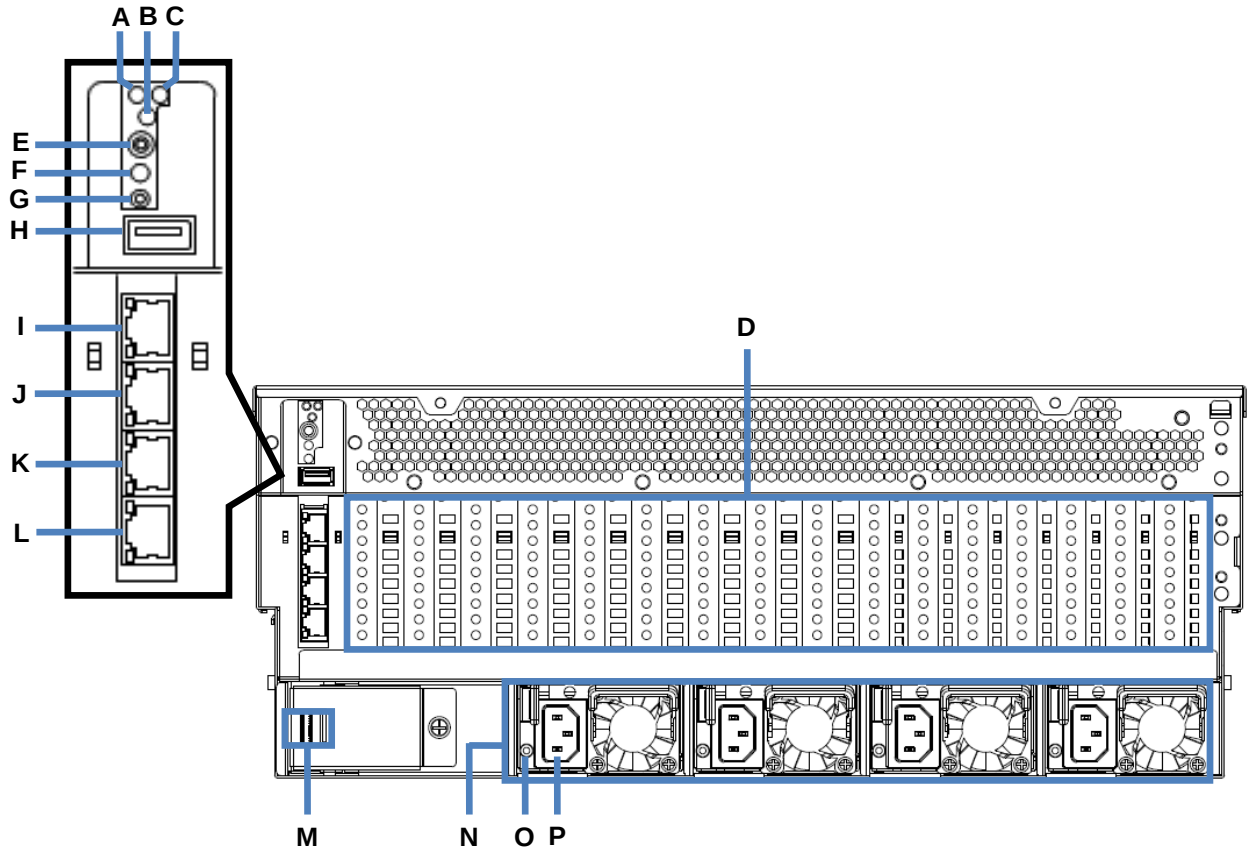
Front and Rear Views

Front View



Legend			
A.	Location LED	**M.**	BMC OFF Button
B.	PSU/FAN LED	**N.**	NMI Button
C.	PCI LED	**O.**	RESET Button
D.	MEM LED	**P.**	UID LED
E.	CPU LED	**Q.**	UID Button
F.	VLT/TMP LED (Voltage/Temperature)	**R.**	SYSTEM POWER LED
G.	CNFG LED (Configuration)	**S.**	SYSTEM POWER Button
H.	MISC LED	**T.**	USB Connectors
I.	NEXT LED	**U.**	VGA Connector
J.	NEXT Button	**V.**	Optical Drive Bay
K.	DISK Access LED	**W.**	2.5-inch Drive Bays
L.	SYSTEM STATUS LED	**X.**	Slide Tag

Rear View



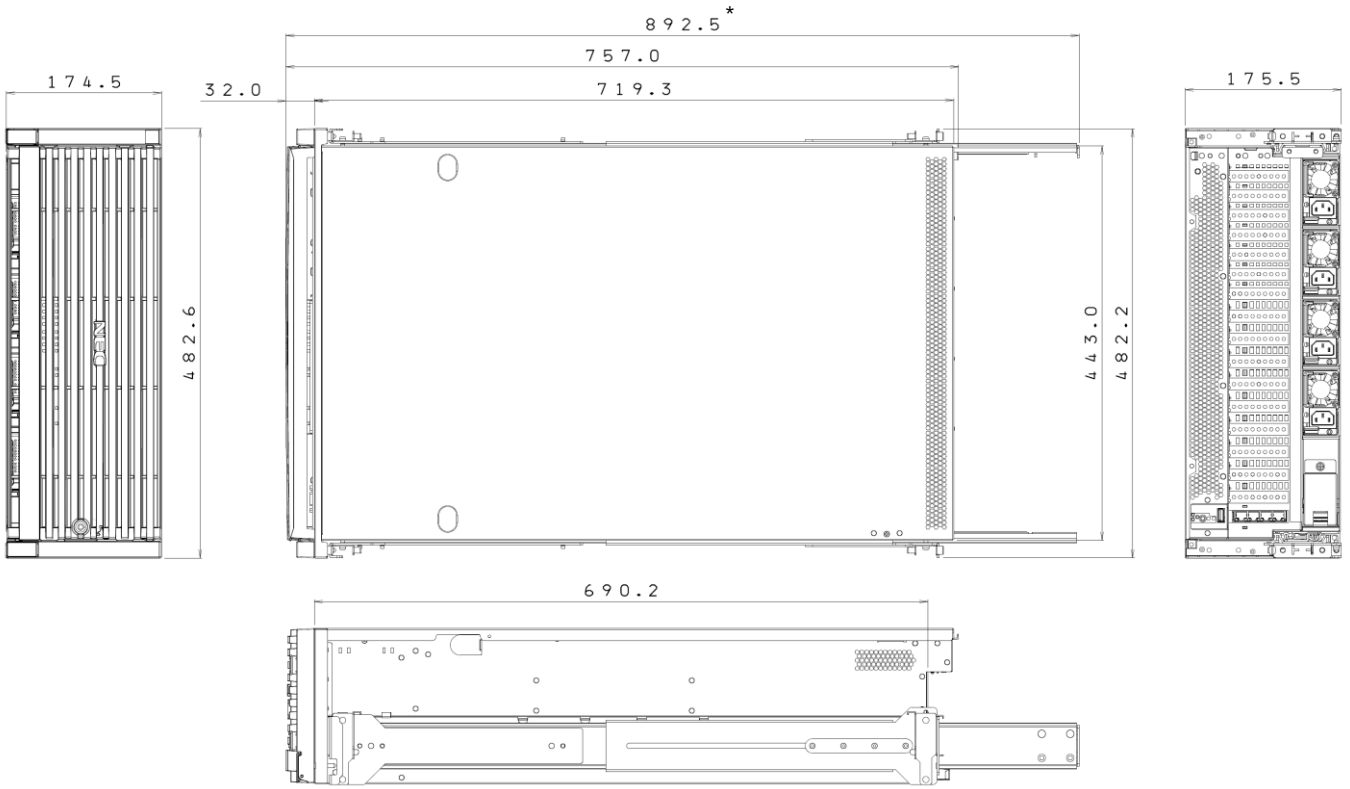
Legend			
A.	MGB#1 Status LED	**I.**	MGB#1 Maintenance LAN Connector
B.	UID LED	**J.**	MGB#1 Management LAN Connector
C.	MGB#2 Status LED *1	**K.**	MGB#2 Maintenance LAN Connector *1
D.	PCI Slots (Low Profile)	**L.**	MGB#2 Management LAN Connector *1
E.	UID Button	**M.**	SUVCable Connector *2
F.	MGB#1 RESET Button	**N.**	Power Supply Unit
G.	MGB#2 RESET Button *1	**O.**	AC POWER LED
H.	USB Connector	**P.**	AC Inlet

*1 Not applicable to A1040b

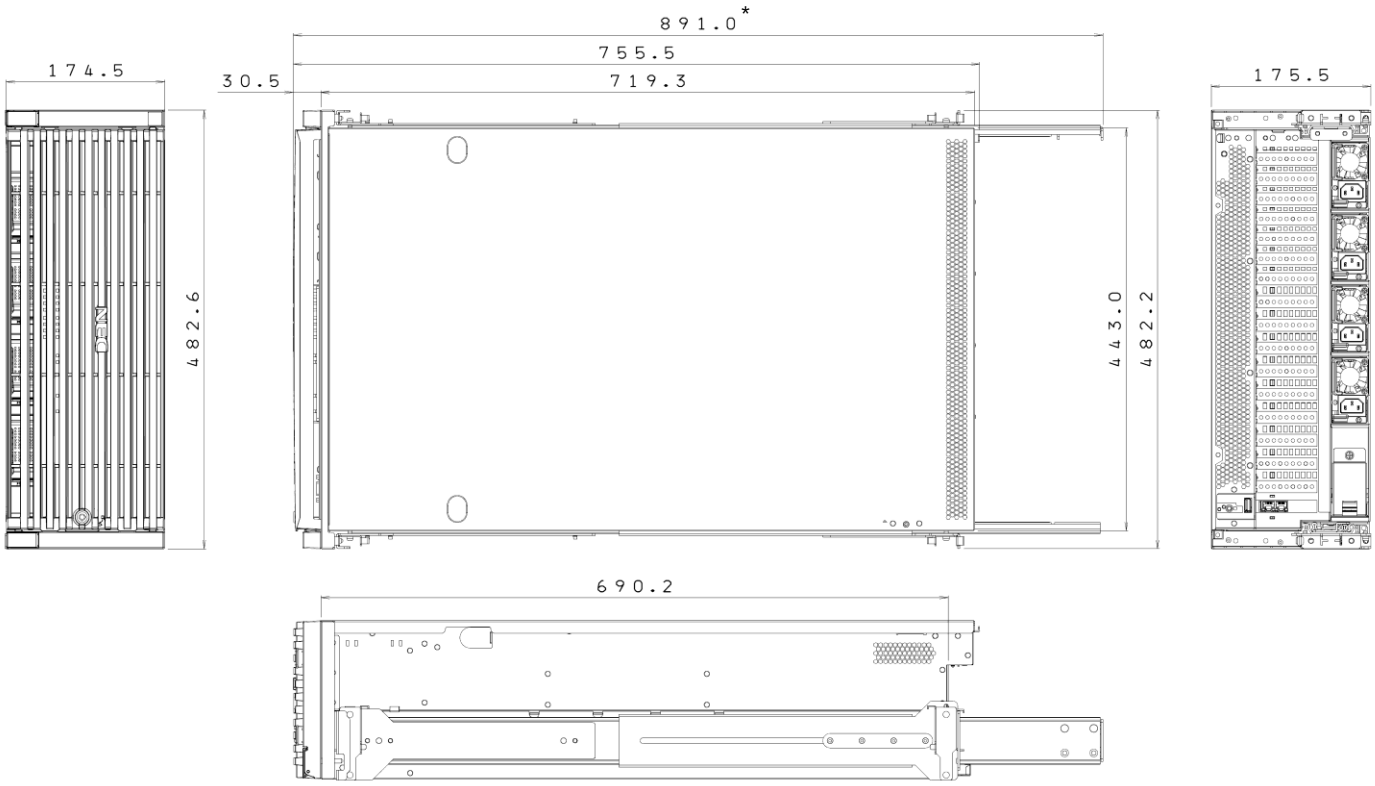
*2 2x USB Connectors and 1x Serial Port and 1 x VGA Connector can be connected through SUB Cable (attached to Base Models, 2m length)

Dimensions (mm)

A2040b/A2020b/A2010b



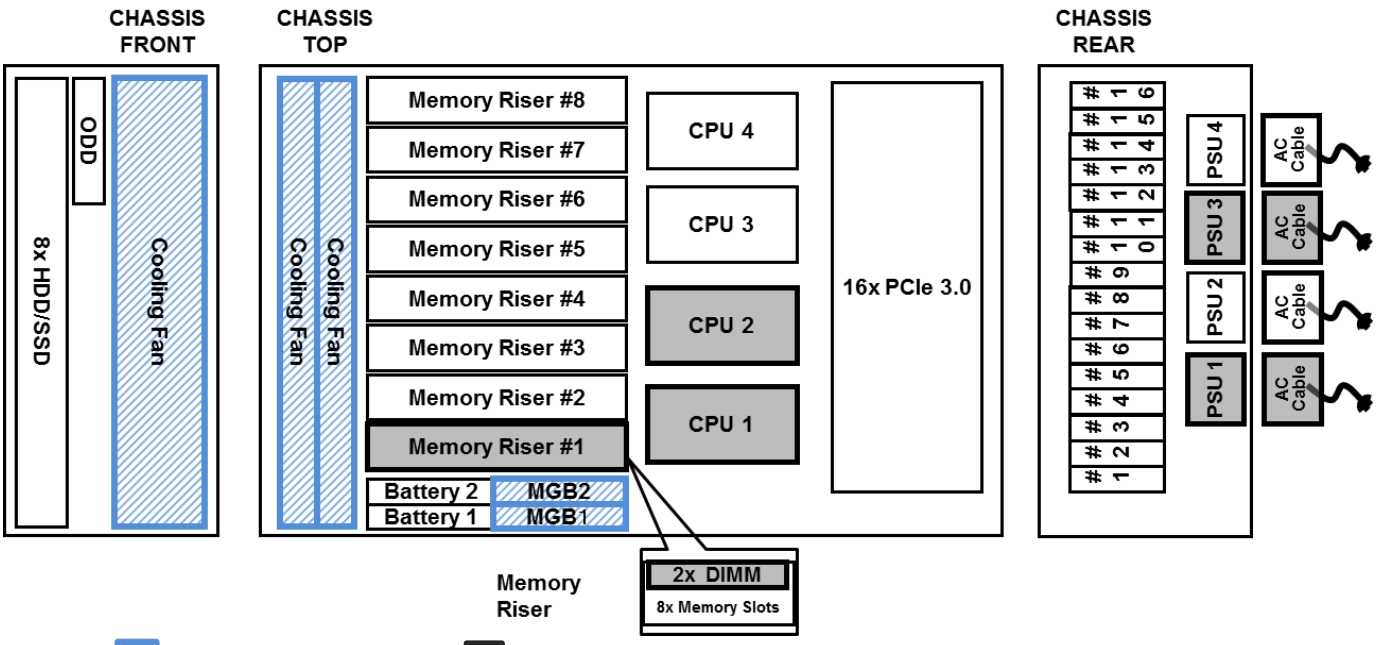
A1040b



* In case of using slide rail attachment (cable arm in use)
The above illustrations including inner rail.

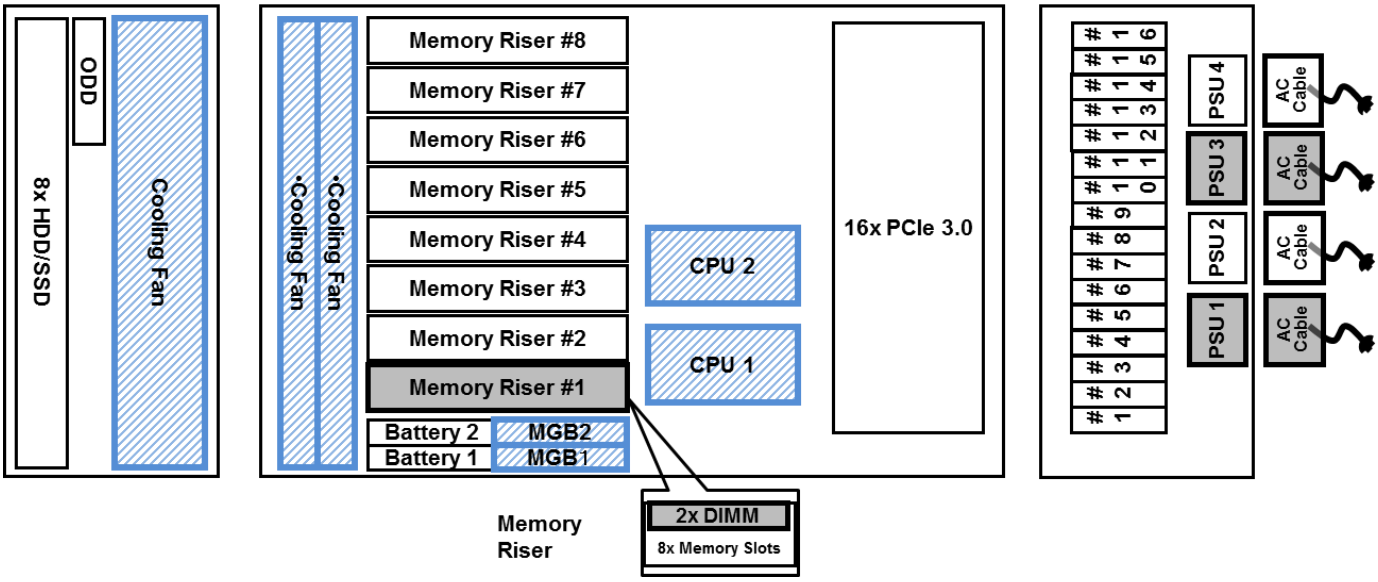
Configuration Diagram

A2040b



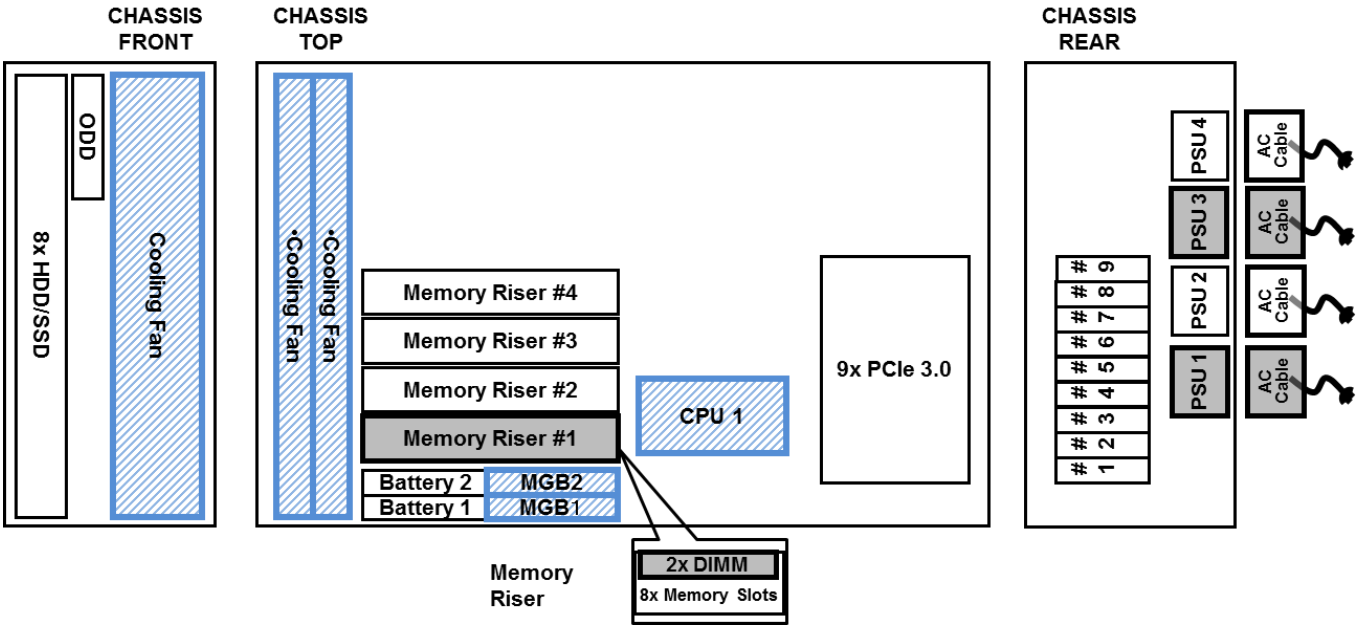
Legend: Standard components Minimum required components

A2020b



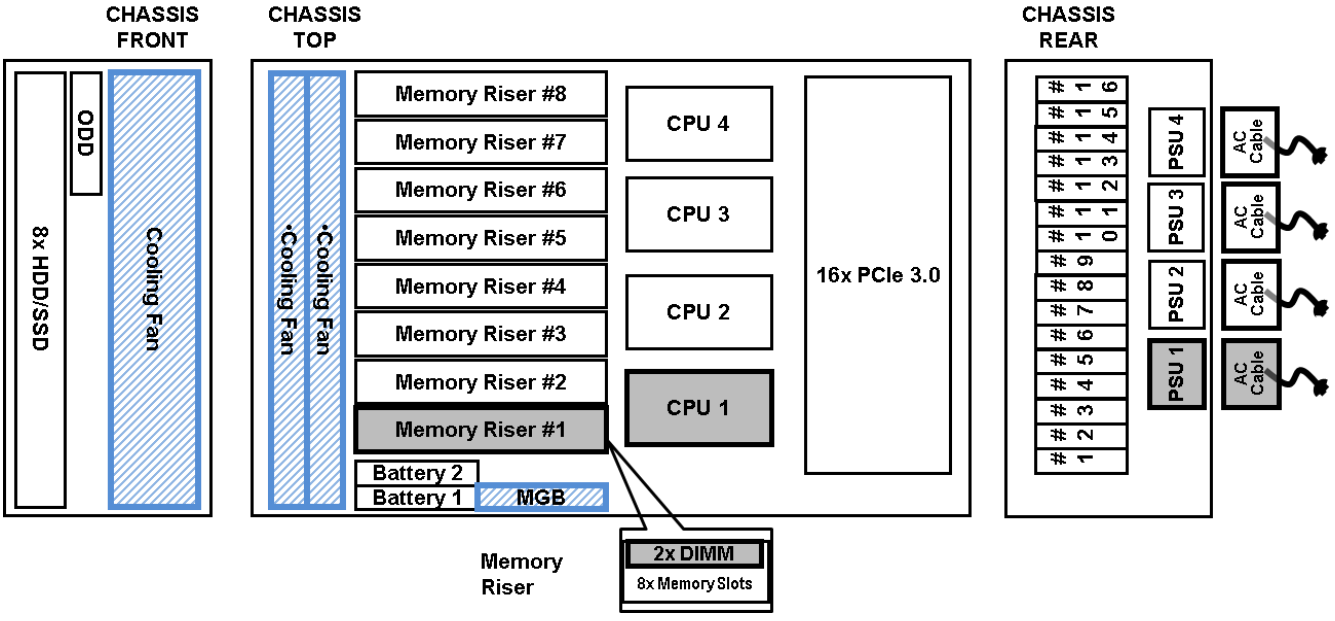
Legend: Standard components Minimum required components

A2010b



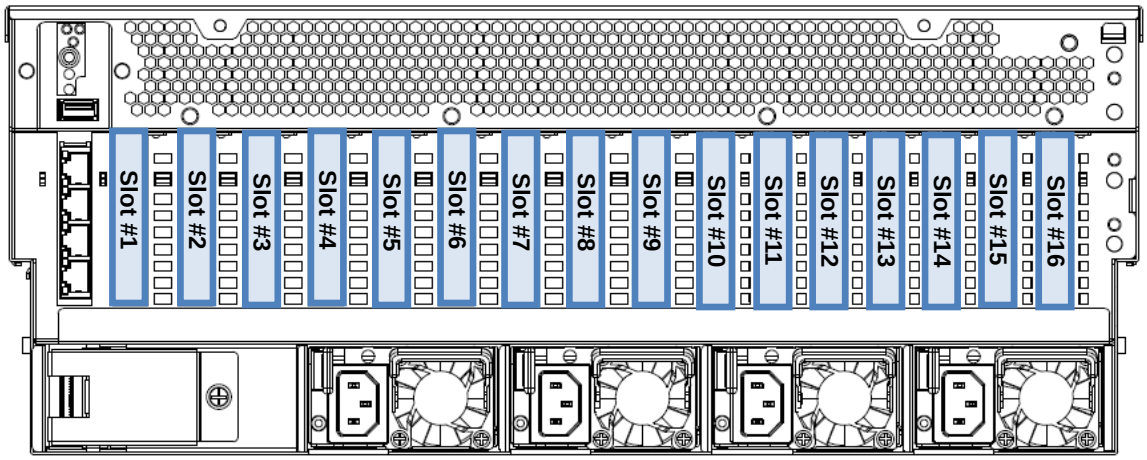
Legend: Standard components Minimum required components

A1040b



Legend: Standard components Minimum required components

Expansion Slot



Legend	
Slot #1	PCI Express 3.0 (x8 lane, x8 socket)
Slot #2	PCI Express 3.0 (x8 lane, x8 socket)
Slot #3	PCI Express 3.0 (x8 lane, x8 socket)
Slot #4	PCI Express 3.0 (x8 lane, x8 socket)
Slot #5	PCI Express 3.0 (x8 lane, x8 socket)
Slot #6	PCI Express 3.0 (x8 lane, x8 socket)
Slot #7	PCI Express 3.0 (x8 lane, x8 socket)
Slot #8	PCI Express 3.0 (x4 lane, x8 socket)
Slot #9	PCI Express 3.0 (x4 lane, x8 socket)
Slot #10	PCI Express 3.0 (x8 lane, x8 socket)
Slot #11	PCI Express 3.0 (x8 lane, x8 socket)
Slot #12	PCI Express 3.0 (x8 lane, x8 socket)
Slot #13	PCI Express 3.0 (x8 lane, x8 socket)
Slot #14	PCI Express 3.0 (x8 lane, x8 socket)
Slot #15	PCI Express 3.0 (x8 lane, x8 socket)
Slot #16	PCI Express 3.0 (x8 lane, x8 socket)

NOTE:

- Foa all PCI slot: Low Profile, 167.6mm in length
- PCI slot performance: x4 lane for Slot #8 and #9, x8 lane for the others
- Hot Plug supported: Slot #2 to #9 (8 slots), except for A1040b
- For A2040b: Slot#1 to #9 are available in case of 2CPU configuration, Slot#1 to #13 are available in case of 3CPU configuration and Slot#1 to #16 are available in case of 4CPU configuration.
- For A2020b: Slot#1 to #16 are available
- For A2010b: Slot#1 to #9 are available
- For A1040b: Slot#1 and Slot#3 to #5 are available in case of 1CPU configuration, Slot#1 to #9 are available in case of 2CPU configuration, Slot#1 to #13 are available in case of 3CPU configuration and Slot#1 to #16 are available in case of 4CPU configuration

Server Configuration

1 Base Models

1.1 A2040b

Product Name/Description	Part Number
NEC Express5800/A2040b no processor, no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-040F
NEC Express5800/A2040b (COPT) no processor, no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-041F

NOTE:

- The base model must be ordered with processor kits, memory riser cards, memory kit, power supply units and power cables.
- Front Bezel and Cable Arm are not attached; need to be ordered separately if required.
- Number of the available PCI Slots and Memory Riser Card depends on the number of CPUs

＜Available PCI Slots and Maximum No. of Memory Riser Card＞

No. of CPU	Max. No. of Memory Riser	Available PCI Slots															
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16
2	4	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	-	-	-	-
3	6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-
4	8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

1.2 A2020b

Product Name/Description	Part Number
NEC Express5800/A2020b (15C/E7-4890v2) 2x Intel® Xeon® Processor E7-4890v2 (2.80 GHz, 15C/30T, 37.5 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-021F
NEC Express5800/A2020b (15C/E7-4870v2) (*CTO*) 2x Intel® Xeon® Processor E7-4870v2 (2.30 GHz, 15C/30T, 30 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-022F
NEC Express5800/A2020b (12C/E7-4860v2) 2x Intel® Xeon® Processor E7-4860v2 (2.60 GHz, 12C/24T, 30 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-023F
NEC Express5800/A2020b (10C/E7-4830v2) 2x Intel® Xeon® Processor E7-4830v2 (2.20 GHz, 10C/20T, 20 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-024F
NEC Express5800/A2020b (8C/E7-4820v2) 2x Intel® Xeon® Processor E7-4820v2 (2.00 GHz, 8C/16T, 16 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-025F
NEC Express5800/A2020b (6C/E7-4809v2) (*CTO*) 2x Intel® Xeon® Processor E7-4809v2 (1.90 GHz, 6C/12T, 12 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-026F
NEC Express5800/A2020b (10C/E7-8891v2) (*CTO*) 2x Intel® Xeon® Processor E7-8891v2 (3.20 GHz, 10C/20T, 37.5 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-027F
NEC Express5800/A2020b (6C/E7-8893v2) 2x Intel® Xeon® Processor E7-8893v2 (3.40 GHz, 6C/12T, 37.5 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-028F

NOTE:

- The base model must be ordered with memory riser cards, memory kit, power supply units and power cables.
- Front Bezel and Cable Arm are not attached; need to be ordered separately if required.
- 2CPU (fixed) model: cannot add CPU
- **(*CTO*)** CTO categorized item; lead time for delivery is different from other item.

＜Available PCI Slots and Maximum No. of Memory Riser Card＞

No. of CPU	Max. No. of Memory Riser	Available PCI Slots															
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16
2	8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

1.3 A2010b

Product Name/Description	Part Number
NEC Express5800/A2010b (15C/E7-4890v2) 1x Intel® Xeon® Processor E7-4890v2 (2.80 GHz, 15C/30T, 37.5 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-031F
NEC Express5800/A2010b (15C/E7-4870v2) (*CTO*) 1x Intel® Xeon® Processor E7-4870v2 (2.30 GHz, 15C/30T, 30 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-032F
NEC Express5800/A2010b (12C/E7-4860v2) 1x Intel® Xeon® Processor E7-4860v2 (2.60 GHz, 12C/24T, 30 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-033F
NEC Express5800/A2010b (10C/E7-4830v2) 1x Intel® Xeon® Processor E7-4830v2 (2.20 GHz, 10C/20T, 20 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-034F
NEC Express5800/A2010b (8C/E7-4820v2) 1x Intel® Xeon® Processor E7-4820v2 (2.00 GHz, 8C/16T, 16 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-035F
NEC Express5800/A2010b (6C/E7-4809v2) (*CTO*) 1x Intel® Xeon® Processor E7-4809v2 (1.90 GHz, 6C/12T, 12 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-036F
NEC Express5800/A2010b (10C/E7-8891v2) (*CTO*) 1x Intel® Xeon® Processor E7-8891v2 (3.20 GHz, 10C/20T, 37.5 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-037F
NEC Express5800/A2010b (6C/E7-8893v2) 1x Intel® Xeon® Processor E7-8893v2 (3.40 GHz, 6C/12T, 37.5 MB) no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3400-038F

NOTE:

- The base model must be ordered with memory riser cards, memory kit, power supply units and power cables.
- Front Bezel and Cable Arm are not attached; need to be ordered separately if required.
- 1CPU (fixed) model: cannot add CPU
- **(*CTO*)** CTO categorized item; lead time for delivery is different from other item.

＜Available PCI Slots and Maximum No. of Memory Riser Card＞

No. of CPU	Max. No. of Memory Riser	Available PCI Slots															
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16
1	4	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	-	-	-	-

1.4 A1040b

Product Name/Description	Part Number
NEC Express5800/A1040b no processor, no RAM, no HDD, no ODD, no Power Supply Unit, no OS	NE3300-040F

NOTE:

- The base model must be ordered with processor kits, memory riser cards, memory kit, power supply units and power cables.
- Front Bezel and Cable Arm are not attached; need to be ordered separately if required.
- Number of the available PCI Slots and Memory Riser Card depends on the number of CPUs

＜Available PCI Slots and Maximum No. of Memory Riser Card＞

No. of CPU	Max. No. of Memory Riser	Available PCI Slots															
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16
1	2	Y	-	Y	Y	Y	-	-	-	-	-	-	-	-	-	-	-
2	4	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	-	-	-	-
3	6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-
4	8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

1.5 COPT

Capacity Optimization (COPT) is a function to optimize computing resources by enabling CPU cores as many required per workload without any impact to the number of DIMM and PCI slots which depends on CPU configuration.

When necessary, CPU core can be enabled additionally on-site.

COPT is available only with A2040b COPT supported model (NEC Express5800/A2040b (COPT)).

In order to enable CPU core, Core Activation Key should be ordered for the required number of cores.

Product Name/Description	Part Number
One Core Activation Key (for Embedded) ● Need to order at the same time of the server. As many CPU cores as the ordered number of the One Core Activation Key (for Embedded) are to be enabled when the ordered server is shipped. ● Up to the ordered number of the One Core Activation Key (for Embedded), CPU cores are available for use.	NE3401-H010F
One Core Activation Key (for Add-on) ● The enabled CPU core can be added on-site. ● As many Code Words as the ordered number of the One Core Activation Key (for Add-on) are shipped, and additional CPU core can be enabled by applying the Code Word to the server.	NE3401-H011F

NOTE:

- Contact to our sales representative for software supporting COPT function.
- When enabling CPU core (or socket) by Core Activation Key, please purchase required software license as appropriate
- In case of using socket license based software, please enable CPU core at the CPU socket on which the software is operating. Software license is required for the socket with at least one enabled CPU core.
- Depending on the OS, the server may need to be rebooted to enable CPU cores
- Remarks to use COPT under VMware environment:
  - Need to purchase the same number of One Core Activation Key as the number of CPU socket.
  - Need to enable the same count of CPU cores among all CPUs (excluding CPUs with all cores disabled)

<Examples of OK or NG configuration in case of 4CPU configuration>

Ex.1: OK	Ex.2: OK	Ex.3: NG	Ex.4: NG
CPU1: 1 core enabled	CPU1: 4 core enabled	CPU1: 2 core enabled	CPU1: 1 core enabled
CPU2: 1 core enabled	CPU2: 0 core enabled	CPU2: 1 core enabled	CPU2: 1 core enabled
CPU3: 1 core enabled	CPU3: 0 core enabled	CPU3: 1 core enabled	CPU3: 1 core enabled
CPU4: 1 core enabled	CPU4: 0 core enabled	CPU4: 0 core enabled	CPU4: 0 core enabled

- For the details, please refer to the latest version of “Express5800/A2040b Capacity Optimization (COPT) User's Guide”
- Default setting of Core Optimization Mode is “Decentralize”, where the enabled CPU cores are distributed to each socket equally.

2 CPU

A2040b (min. 2CPU / max. 4CPU)/ A1040b (min. 1CPU / max. 4CPU)

Product Name/Description	Part Number
Xeon E7-4890 v2 Processor Kit 1x Intel® Xeon® Processor E7-4890 v2(2.80 GHz, 15C/30T, 37.5MB)	NE3301-H001F
Xeon E7-4870v2 Processor Kit (*CTO*) 1x Intel® Xeon® Processor E7-4870v2 (2.30 GHz, 15C/30T, 30 MB)	NE3301-H002F
Xeon E7-4860v2 Processor Kit 1x Intel® Xeon® Processor E7-4860v2 (2.60 GHz, 12C/24T, 30 MB)	NE3301-H003F
Xeon E7-4830v2 Processor Kit 1x Intel® Xeon® Processor E7-4830v2 (2.20 GHz, 10C/20T, 20 MB)	NE3301-H004F
Xeon E7-4820v2 Processor Kit 1x Intel® Xeon® Processor E7-4820v2 (2.00 GHz, 8C/16T, 16 MB)	NE3301-H005F
Xeon E7-4809v2 Processor Kit (*CTO*) 1x Intel® Xeon® Processor E7-4809v2 (1.90 GHz, 6C/12T, 12 MB)	NE3301-H006F
Xeon E7-8891v2 Processor Kit (*CTO*) 1x Intel® Xeon® Processor E7-8891v2 (3.20 GHz, 10C/20T, 37.5 MB)	NE3301-H007F
Xeon E7-8893v2 Processor Kit 1x Intel® Xeon® Processor E7-8893v2 (3.40 GHz, 6C/12T, 37.5 MB)	NE3301-H008F

NOTE:

- **(*CTO*)** CTO categorized item; lead time for delivery is different from other item.
- Different SKU of CPU/Processors cannot be mixed in a server.

CPU Functions

Intel® Xeon® Processors for this server supports the following CPU functions

Category	Function Name/Summary	CPU	
		Xeon E7-4809v2	Xeon E7-4890v2,E7-4870v2 E7-4860v2,E7-4830v2 E7-4820v2 E7-8891v2,E7-8893v2
64 bit	**Intel® 64** 64 bit function	✓	✓
Power Saving	**Enhanced Intel SpeedStep® Technology (Intel® Demand Bases Switching Technology)** Technology to decrease power consumption by adjusting voltage/clock per CPU workload	✓	✓
Performance	**Intel® Turbo Boost Technology** Technology to boost clock frequency	-	✓
Performance	**Intel® Hyper-Threading Technology** Technology to use one core as two threads	✓	✓
Virtualization	**Intel® Virtualization Technology** Technology to provide hardware (CPU) support for processor virtualization	✓	✓
Security	**Execute Disable** Technology to avoid the execution of malware utilizing buffer over flow error	✓	✓

The maximum number of logical processors supported by OS

See the table below for the maximum number of logical processors that you can actually use on your system

Maximum Number of Logical Processors Supported by Operating Systems		Maximum Number of Logical Processors Supported by this Server
Microsoft Windows Server 2008 R2 SP1 Standard Microsoft Windows Server 2008 R2 SP1 Enterprise Microsoft Windows Server 2008 R2 SP1 Datacenter	**256** [1]	**120**
Microsoft Windows Server 2012 Standard Microsoft Windows Server 2012 Datacenter Microsoft Windows Server 2012 R2 Standard Microsoft Windows Server 2012 R2 Datacenter	**640** [1]	**120**
Red Hat Enterprise Linux 6 (x86_64)	**160**	**120**
Oracle Linux 6 /UEK R2 (x86_64)	**160**	**120**
VMware ESXi 5.1	**160**	**120**
VMware ESXi 5.5	**320**	**120**

[1] The maximum number of logical processors when using Hyper-V are below:

- Windows Server 2008 R2 SP1: 64 logical processors
- Windows Server 2012, Windows Server 2012 R2 : 320 logical processors

3 Memory

3.1 Memory Riser Card

Memory Riser Card (“MR”) is a module for installing up to 8 DIMM

Please refer to “Memory” of “Reference” section for Memory Riser Card installation priority/order.

For A2040b (including COPT model), A2020b，A2010b

Product Name/Description	Part Number
Memory Riser Card （16GB/32GB/64GB Memory Kit） Module with 8x DIMM slots. Hot-plug supoprted	NE3402-H001
Memory Riser Card （16GB/32GB/64GB/128GB Memory Kit） Module with 8x DIMM slots. Hot-plug supoprted	NE3402-H002

NOTE:

- A2040b: 1 to 2 MRs can be installed per CPU, thus up to 8 MRs can be installed with 4CPU configuration
- A2020b: Up to 8 MRs can be installed
- A2010b: Up to 4 MRs can be installed
- Not pre-installed in Base Model. At least one MR needs to be ordered.
- Cover for Hot-plug is attached
- NE3402-H001 and NE3402-H002 can be mixed in one server.

For A1040b

Product Name/Description	Part Number
Memory Riser Card （16GB/32GB/64GB Memory Kit） Module with 8x DIMM slots. Hot-plug not supported	NE3302-H001
Memory Riser Card （16GB/32GB/64GB/128GB Memory Kit） Module with 8x DIMM slots. Hot-plug not supported	NE3302-H002

NOTE:

- 1 to 2 MRs can be installed per CPU, thus up to 8 MRs can be installed with 4CPU configuration
- Not pre-installed in Base Model. At least one MR needs to be ordered.
- NE3302-H001 and NE3302-H002 can be mixed in one server.

Customized Configuration Service (at the Server Delivery)

Product Name/Description	Part Number
Customized Service: Distribution Mode for COPT	NE3300-SV101

NOTE:

- This service can be ordered only for A2040b COPT Model and up to one item (service) can be ordered per one server.
- With this service, the location of MR can be changed from the standard BTO Configuration.
- When allocating enabled CPU cores to all CPU (distributed), this service is recommended to use so that MR and Memory can be distributed, too. Please refer to “Memory” of “Reference” section for Memory Riser Card installation priority/order.

3.2 Memory Configuration

Refer to the section in accordance with your memory configuration.
Memory configuration consists of 2 modes; “Independent Mode” and “Lockstep Mode”.
Under each Mode, 2 features are available; “Memory Rank Sparing” and “Memory Mirroring”.
Default setting at the server delivery is Lockstep Mode.

- Independent Mode (only): Refer to **3.2.1**
- Lockstep Mode (only): Refer to **3.2.2**
- Memory Rank Sparing: Refer to **3.2.3**
- Memory Mirroring: Refer to **3.2.4**

Please refer to “Memory” of “Reference” section for Memory on the Memory Riser Card (DIMM) installation priority/order per Independent Mode, Lockstep Mode, Memory Rank Sparing and Memory Mirroring..

Memory Configuration Feature Comparison

See the table below for feature comparisons of memory configurations supported.

	Independent Mode (only)	Memory Rank Sparing under Independent Mode	Memory Mirroring under Independent Mode
Summary		**In case of correctable errors, switching to spare memory rank**	**Redundant memory**
Available Memory	-	1/2(8GB RDIMM), 3/4(16GB RDIMM), 7/8(32GB LRDIMM) or 3/4(64GB LRDIMM) of physical memory	1/2 of physical memory
Available Memory Channel [1]	4	4	4
Maximum Memory Capacity [2]	512GB(8GB RDIMM) 1024GB(16GB RDIMM) 2048GB(32GB LRDIMM) 4096GB(64GB LRDIMM)	256GB(8GB RDIMM) 768GB(16GB RDIMM) 1792GB(32GB LRDIMM) 3072GB(64GB LRDIMM)	256GB(8GB RDIMM) 512GB(16GB RDIMM) 1024GB(32GB LRDIMM) 2048GB(64GB LRDIMM)
Data Correction	ECC, x4 SDDC	←	←
Notes	• RDIMM and LRDIMM cannot be mixed	• RDIMM and LRDIMM cannot be mixed	• RDIMM and LRDIMM cannot be mixed

[1] 4 memory channels per Memory Riser Card.
[2] All DIMMs have the same capacity

	Lockstep Mode (only)	Memory Rank Sparing under Lockstep Mode	Memory Mirroring under Lockstep Mode
Summary	**2 DRAM failure detected/corrected by memory parallel operation**	**In case of correctable errors, switching to spare memory rank**	**Redundant memory**
Available Memory	-	1/2(8GB RDIMM), 3/4(16GB RDIMM), 7/8(32GB LRDIMM) or 3/4(64GB LRDIMM) of physical memory	1/2 of physical memory
Available Memory Channel [3]	4	4	4
Maximum Memory Capacity [4]	512GB(8GB RDIMM) 1024GB(16GB RDIMM) 2048GB(32GB LRDIMM) 4096GB(64GB LRDIMM)	256GB(8GB RDIMM) 768GB(16GB RDIMM) 1792GB(32GB LRDIMM) 3072GB(64GB LRDIMM)	256GB(8GB RDIMM) 512GB(16GB RDIMM) 1024GB(32GB LRDIMM) 2048GB(64GB LRDIMM)
Data Correction	ECC, DDDC	←	←
Notes	• RDIMM and LRDIMM cannot be mixed	• RDIMM and LRDIMM cannot be mixed	• RDIMM and LRDIMM cannot be mixed

[3] 4 memory channels per Memory Riser Card

[4] All DIMMs have the same capacity

Customized Configuration Service (at the Server Delivery)

Product Name/Description	Part Number
Customized Service: Distribution Mode for COPT	NE3300-SV101

NOTE:

- This service can be ordered only for A2040b COPT Model and up to one item (service) can be ordered per one server.
- With this service, according to the change of the location of MR, memory location can be changed from the standard BTO Configuration.
- When allocating enabled CPU cores to all CPU (distributed), this service is recommended to use so that MR and Memory can be distributed, too. Please refer to “Memory” of “Reference” section for the details.

3.2.1 Independent Mode (only)

No. of Available Slot: Max. 4 sets (8x DIMMs) per Memory Riser Card

Category		Product Name/Description	Part Number
Registered DIMM (RDIMM)	**1600 MHz**	**16GB MEM (2 x 8GB RDIMM)** 2x 8GB Registered DIMM, DDR3L-1600(PC3L-12800), ECC	NE3302-H010F
		32GB MEM (2x16GB RDIMM) 2x 16GB Registered DIMM, DDR3L-1600(PC3L-12800) , ECC	NE3302-H011F
Load Reduced DIMM (LRDIMM)	**1600 MHz**	**64GB MEM (2x32GB LRDIMM)** 2x 32GB Load Reduced DIMM, DDR3L-1600(PC3L-12800) , ECC	NE3302-H012F
	1066 MHz	**128GB MEM (2x64GB LRDIMM)** 2x 64GB Load Reduced DIMM, DDR3L-1333(PC3L-10600) , ECC	NE3302-H013F

NOTE:

- Not-preinstalled. Need to order at least 1 set (2x DIMM)
- For higher memory performance, same type of memory is recommended to be used by every 2 sets (4x DIMM) in one Memory Riser Card.
- RDIMM and LRDIMM cannot be mixed in a server

3.2.2 Lockstep Mode (only)

No. of Available Slot: Max. 4 sets (8x DIMMs) per Memory Riser Card

Category		Product Name/Description	Part Number
Registered DIMM (RDIMM)	**1600 MHz**	**16GB MEM (2 x 8GB RDIMM)** 2x 8GB Registered DIMM, DDR3L-1600(PC3L-12800), ECC	NE3302-H010F
		32GB MEM (2x16GB RDIMM) 2x 16GB Registered DIMM, DDR3L-1600(PC3L-12800) , ECC	NE3302-H011F
Load Reduced DIMM (LRDIMM)	**1600 MHz**	**64GB MEM (2x32GB LRDIMM)** 2x 32GB Load Reduced DIMM, DDR3L-1600(PC3L-12800) , ECC	NE3302-H012F
	1066 MHz	**128GB MEM (2x64GB LRDIMM)** 2x 64GB Load Reduced DIMM, DDR3L-1333(PC3L-10600) , ECC	NE3302-H013F

NOTE:

- Not-preinstalled. Need to order at least 1 set (2x DIMM)
- For higher memory performance, same type of memory is recommended to be used by every 2 sets (4x DIMM) in one Memory Riser Card.
- RDIMM and LRDIMM cannot be mixed in a server

3.2.3 Memory Rank Sparing

No. of Available Slot: Max. 2 sets (8x DIMMs) per Memory Riser Card

Product Name/Description	Part Number
32GB MEM for Memory Rank Sparing (4 x 8GB RDIMM) 4x 8GB Registered DIMM, DDR3L-1600(PC3L-12800), ECC	NE3302-H020F
64GB MEM for Memory Rank Sparing (4 x 16GB RDIMM) 4x 16GB Registered DIMM, DDR3L-1600(PC3L-12800), ECC	NE3302-H021F
128GB MEM for Memory Rank Sparing (4 x 32GB LRDIMM) 4x 32GB Load Reduced DIMM, DDR3L-1600(PC3L-12800), ECC	NE3302-H022F
256GB MEM for Memory Rank Sparing (4 x 64GB LRDIMM) 4x 32GB Load Reduced DIMM, DDR3L-1333(PC3L-10600), ECC	NE3302-H023F

NOTE:

- Not-preinstalled. Need to order at least 1 set (4x DIMM)
- RDIMM and LRDIMM cannot be mixed in a server

Logical Memory Capacity at Memory Rnak Sparing (ex. Using the Same Capacity DIMMs)

No. of DIMM	Physical Memory Capacity			
	8GB RDIMM	16GB RDIMM	32GB LRDIMM	64GB LRDIMM
4	16GB	48GB	112GB	192GB
8	32GB	96GB	224GB	384GB
12	48GB	144GB	336GB	576GB
16	64GB	192GB	448GB	768GB
20	80GB	240GB	560GB	960GB
24	96GB	288GB	672GB	1152GB
28	112GB	336GB	784GB	1344GB
32	128GB	384GB	896GB	1536GB
36	144GB	432GB	1008GB	1728GB
40	160GB	480GB	1120GB	1920GB
44	176GB	528GB	1232GB	2122GB
48	192GB	576GB	1344GB	2304GB
52	208GB	624GB	1456GB	2496GB
56	224GB	672GB	1568GB	2688GB
60	240GB	720GB	1680GB	2880GB
64	256GB	768GB	1792GB	3072GB

3.2.4 Memory Mirroring

No. of Available Slot: Max. 2 sets (8x DIMMs) per Memory Riser Card

Product Name/Description	Part Number
32GB MEM for Memory Mirroring (4 x 8GB RDIMM) 4x 8GB Registered DIMM, DDR3L-1600(PC3L-12800), ECC	NE3302-H030F
64GB MEM for Memory Mirroring (4 x 16GB RDIMM) 4x 16GB Registered DIMM, DDR3L-1600(PC3L-12800), ECC	NE3302-H031F
128GB MEM for Memory Mirroring (4 x 32GB LRDIMM) 4x 32GB Load Reduced DIMM, DDR3L-1600(PC3L-12800), ECC	NE3302-H032F
256GB MEM for Memory Mirroring (4 x 64GB LRDIMM) 4x 32GB Load Reduced DIMM, DDR3L-1333(PC3L-10600), ECC	NE3302-H033F

NOTE:

- Not-preinstalled. Need to order at least 1 set (4x DIMM)
- RDIMM and LRDIMM cannot be mixed in a server

Memory Clock

DDR3 Memory clock depends on CPU, Memory Configuration, System BIOS settings. Please refer below for the maximum clock. Please refer to “Memory” of “Reference” section for the details.

CPU	Memory Configuration/Mode	Memory Type	No. of DIMMs (per 1CPU)	Clock	
				1.35V	1.5V
Xeon® E7-4890v2 E7-4870v2 E7-4860v2 E7-8891v2 E7-8893v2	Independent Mode	RDIMM(8, 16GB)	Up to 16	1333 MHz	1333 MHz
		LRDIMM (32GB)	Up to 16	1333 MHz	1333 MHz
		LRDIMM (64GB)	Up to 16	-	1066 MHz
	Lockstep Mode	RDIMM (8, 16GB)	Up to 16	1333 MHz	1600 MHz
		LRDIMM (32GB)	Up to 16	1333 MHz	1600 MHz
		LRDIMM (64GB)	Up to 16	-	1066 MHz
Xeon® E7-4830v2 E7-4820v2	Independent Mode	RDIMM(8, 16GB)	Up to 16	1066 MHz	1066 MHz
		LRDIMM (32GB)	Up to 16	1066 MHz	1066 MHz
		LRDIMM (64GB)	Up to 16	-	1066 MHz
	Lockstep Mode	RDIMM (8, 16GB)	Up to 16	1333 MHz	1600 MHz
		LRDIMM (32GB)	Up to 16	1333 MHz	1600 MHz
		LRDIMM (64GB)	Up to 16	-	1066 MHz
Xeon® E7-4809v2	Independent Mode	RDIMM(8, 16GB)	Up to 16	1066 MHz	1066 MHz
		LRDIMM (32GB)	Up to 16	1066 MHz	1066 MHz
		LRDIMM (64GB)	Up to 16	-	1066 MHz
	Lockstep Mode	RDIMM (8, 16GB)	Up to 16	1333 MHz	1333 MHz
		LRDIMM (32GB)	Up to 16	1333 MHz	1333 MHz
		LRDIMM (64GB)	Up to 16	-	1066 MHz

NOTE:

- Default Memory voltage setting (at the server delivery) is 1.35V (power saving). Memory voltage can be changed by System BIOS Set-up menu.
- At Lockstep mode, strongly recommends to change memory voltage to 1.5V by BIOS set-up menu.
- Memory voltage is automatically 1.5V under the following configuration (cannot set 1.35V)
  - 64GB LRDIMM installed

Maximum Memory Capacity

Due to x86 architecture and the specifications of supported OS, the available memory capacity changes, as the following list shows:

Maximum Memory Capacity supported by each OS		Max. Memory Capacity for this Server
Microsoft Windows Server 2008 R2 SP1 Standard [1]	**32 GB**	**32 GB**
Microsoft Windows Server 2008 R2 SP1 Enterprise [1] Microsoft Windows Server 2008 R2 SP1 Datacenter [1]	**2 TB**	**2 TB**
Microsoft Windows Server 2012 Standard [1] Microsoft Windows Server 2012 Datacenter [1] Microsoft Windows Server 2012 R2 Standard [1] Microsoft Windows Server 2012 R2 Datacenter [1]	**4 TB**	**4 TB**
Red Hat Enterprise Linux 6 (x86_64)	**3 TB**	**2 TB**
Oracle Linux6/UEK R2 (x86_64)	**4 TB**	**2 TB**
VMware ESXi 5.1 [2]	**2 TB**	**2 TB**
VMware ESXi 5.5 [2]	**4 TB**	**2 TB**

[1] The Maximum Memory Capacity when using Hyper-V:

- Windows Server 2008 R2 SP1 Standard: 32GB
- Windows Server 2008 R2 SP1 Enterprise/Datacenter: 1TB
- Windows Server 2012, Windows Server 2012 R2: 4TB

[2] The Maximum Memory Capacity for virtual machine: 1TB

4 Internal Disk Drives

4.1 RAID Configuration

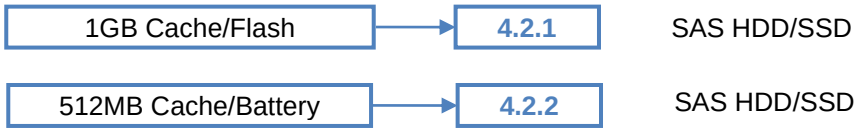
RAID0/1/5/6/10/50/60 is supported.
2 kinds of RAID Controller are supported; with 1GB or 512MB cache.
With 1 RAID Controller configuration, max. 8 internal drives can be connected per one RAID Controller.
With 2 RAID Controller configuration, max. 4 internal drives can be connected per one RAID Controller.

Controller	RAID	No. of Disk	Capacity	Hot Spare
NE3303-168 or NE3303-173	RAID 0 (striping)	1 ~ 8	Drive Capacity x No. of Drive	N
	RAID 1 (mirroring)	2	Drive Capacity x No. of Drive / 2	Y
	RAID 5 (parity)	3 ~ 8	Drive Capacity x (No. of Drive-1)	Y
	RAID 6 (double parity)	3 ~ 8	Drive Capacity x (No. of Drive-2)	Y
	RAID 10 (RAID1 + RAID0)	4/6/8	Drive Capacity x No. of Drive / 2	Y
	RAID 50 (RAID5 + RAID0)	6 / 8	Drive Capacity x (No. of Drive-2)	Y
	RAID 60 (RAID6 + RAID0)	6 / 8	Drive Capacity x (No. of Drive-4)	Y

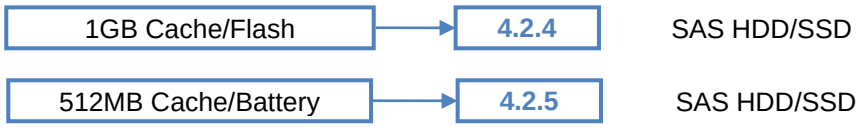
NOTE:

- Needs to order RAID Controller to configure internal drives
- For RAID Configuration, same type of internal drives need to be ordered within one RAID group (pack)
- Multiple RAID group can be configured by one RAID Controller. In case of RAID1, 4 groups at maximum.
- Different capacity/rotation speed/disk type of internal drives can be mixed in different RAID groups.
- When configuring hot-spare disks, need to use same type of internal disk for the RAID group.
  - All internal drives are same type, Global Hot Spare can be available.
  - When mixing different capacity/rotation speed/disk type drives, need to use Dedicated Hot Spare per RAID group.
- With 2 RAID Controller configuration, max. 4 internal drives can be connected per one RAID controller. Therefore, RAID50/60 is not available, with 2 RAID Controller configuration,
- With 2 RAID Controller configurations, RAID cannot be configured among internal drives under different RAID Controllers.
- Please refer to “Internal Drive” of “Reference” section for the details about Internal Drive: Priority/Order of Installatioin.

1x RAID Controller Configuration



2x RAID Controller Configuration



4.2 Internal Drive Configuration

- For RAID Configuration, same type of internal drives need to be ordered within one RAID group (pack)
- With 1 RAID Controller configuration, different HDDs, SDDs or HDD and SSD cannot be configured in the BTO. When mixing these drives, please refer to the section “Internal Disk” at “References”.
- RAID 0/1/5/6/10 can be configured at BTO Configuration. For RAID 50/60, need to configure after the delivery.
- With 2 RAID Controller configuration, the 2nd RAID Controller and 5th and more HDDs under the 2nd RAID Controller cannot be configured at BTO Configuration.
- With 2 RAID Controller configuration, RAID cannot be configured between internal drives under different RAID Controllers.
- The delivery lead time of SSD is longer than the others. Please contact to our sales representative for the delivery.

4.2.1 1x RAID Controller (1GB Cache/Flash) Configuration

Category		Product Name/Description	Part Number
Controller (Need to order 1)		**RAID Controller (1GB, RAID 0/1/5/6/10/50/60)** LSI MegaRAID SAS 9270CV-8i (with CV) RAID0/1/5/6/10/50/60, 1GB Cache, Internal 8 port (4x2 connector), PCIe 3.0(x8), SAS 6Gb/s, Flash Back-up Unit included	NE3303-168
Cable		**SAS Cable** 1 x mini-SAS to 1 x mini-SAS, x2	(included)
HDD Cage		**2.5-inch HDD Cage** 8x 2.5-inch, Drive Bay, Hot-Plug supported	(included)
Internal Drives (Max. 8)	**SAS HDD**	**300GB HDD** 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-301
		450GB HDD 1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-322
		600GB HDD 1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-304
		900GB HDD 1x 900 GB SAS HDD, 2. 5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-332
		1.2TB HDD 1x1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-408
		146.5GB HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm 512B sector	NE3350-303
		300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm 512B sector	NE3350-331
	SAS SSD (eMLC)	**200GB SSD** (*CTO*) 1x 200 GB SAS SSD, eMLC, 2.5 型, 6Gb/s 512B sector	NE3350-711F
		400GB SSD (*CTO*) 1x 400 GB SAS SSD, eMLC, 2.5 型, 6Gb/s 512B sector	NE3350-712F

NOTE:

- Need to order at least 1 internal drive.
- **(*CTO*)** CTO categorized item; lead time for delivery is different from other item.

4.2.2 1x RAID Controller (512MB Cache) Configuration

Category		Product Name/Description	Part Number
Controller (Need to order 1)		**RAID Controller (512MB, RAID 0/1/5/6/10/50/60)** LSI MegaRAID SAS 9272-8i RAID0/1/5/6/10/50/60, 512MB Cache, Internal 8 port (4x2 connector), PCIe 3.0(x8), SAS 6Gb/s	NE3303-173
Battery		**Battery Back-up Unit (for NE3303-173)** Battery for LSI MegaRAID SAS /9272-8i, 600mm Battery Cable attached	NE3303-153
Cable		**SAS Cable** 1 x mini-SAS to 1 x mini-SAS, x2	(included)
HDD Cage		**2.5-inich HDD Cage** 8x 2.5-inch, Drive Bay, Hot Plug supported	(included)
Internal Drives (Max. 8)	**SAS HDD**	**300GB HDD** 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-301
		450GB HDD 1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-322
		600GB HDD 1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-304
		900GB HDD 1x 900 GB SAS HDD, 2. 5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-332
		1.2TB HDD 1x1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-408
		146.5GB HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm 512B sector	NE3350-303
		300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm 512B sector	NE3350-331
	SAS SSD (eMLC)	**200GB SSD** (*CTO*) 1x 200 GB SAS SSD, eMLC, 2.5 型, 6Gb/s 512B sector	NE3350-711F
		400GB SSD (*CTO*) 1x 400 GB SAS SSD, eMLC, 2.5 型, 6Gb/s 512B sector	NE3350-712F

NOTE:

- Need to order at least 1 internal drive.
- **(*CTO*)** CTO categorized item; lead time for delivery is different from other item.

4.2.3 2x RAID Controller (1GB Cache/Flash) Configuration

Category		Product Name/Description	Part Number
Controller (Need to order 2)		**RAID Controller (1GB, RAID 0/1/5/6/10/50/60)** LSI MegaRAID SAS 9270CV-8i (with CV) RAID0/1/5/6/10/50/60, 1GB Cache, Internal 8 port (4x2 connector), PCIe 3.0(x8), SAS 6Gb/s, Flash Back-up Unit included	NE3303-168
Cable		**SAS Cable** 1 x mini-SAS to 1 x mini-SAS, x2	(included)
HDD Cage		**2.5-inch HDD Cage** 8x 2.5-inch, Drive Bay, Hot Plug supported	(included)
Internal Drives (Max. 8)	**SAS HDD**	**300GB HDD** 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-301
		450GB HDD 1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-322
		600GB HDD 1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-304
		900GB HDD 1x 900 GB SAS HDD, 2. 5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-332
		1.2TB HDD 1x1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-408
		146.5GB HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm 512B sector	NE3350-303
		300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm 512B sector	NE3350-331
	SAS SSD (eMLC)	**200GB SSD** (*CTO*) 1x 200 GB SAS SSD, eMLC, 2.5 型, 6Gb/s 512B sector	NE3350-711F
		400GB SSD (*CTO*) 1x 400 GB SAS SSD, eMLC, 2.5 型, 6Gb/s 512B sector	NE3350-712F

NOTE:

- Need to order at leaset 2 internal drives
- **(*CTO*)** CTO categorized item; lead time for delivery is different from other item.
- RAID50/60 is not available due to the limitation of the number of internal disks.
- RAID configuration is not available between internal drives under different RAID Controllers.
- RAID settings at the server delivery are done only to the internal disk drives at Slot #0 to Slot #3.
- Not configured into the server (not BTO) for the 2nd RAID Controller and 5th and beyond internal disk drives.

4.2.4 2x RAID Controller (512MB Cache) Configuration

Category		Product Name/Description	Part Number
Controller (Need to order 2)		**RAID Controller (512MB, RAID 0/1/5/6/10/50/60)** LSI MegaRAID SAS 9272-8i RAID0/1/5/6/10/50/60, 512MB Cache, Internal 8 port (4x2 connector), PCIe 3.0(x8), SAS 6Gb/s	NE3303-173
Battery		**Battery Back-up Unit (for NE3303-173)** Battery for LSI MegaRAID SAS /9272-8i, 600mm Battery Cable attached	NE3303-153
Cable		**SAS Cable** 1 x mini-SAS to 1 x mini-SAS, x2	(included)
HDD Cage		**2.5-inch HDD Cage** 8x 2.5-inch, Drive Bay, Hot Plug supported	(included)
Internal Drives (Max. 8)	**SAS HDD**	**300GB HDD** 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-301
		450GB HDD 1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-322
		600GB HDD 1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-304
		900GB HDD 1x 900 GB SAS HDD, 2. 5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-332
		1.2TB HDD 1x1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm 512B sector	NE3350-408
		146.5GB HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm 512B sector	NE3350-303
		300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm 512B sector	NE3350-331
	SAS SSD (eMLC)	**200GB SSD** (*CTO*) 1x 200 GB SAS SSD, eMLC, 2.5 型, 6Gb/s 512B sector	NE3350-711F
		400GB SSD (*CTO*) 1x 400 GB SAS SSD, eMLC, 2.5 型, 6Gb/s 512B sector	NE3350-712F

NOTE:

- Need to order at least 2 internal drives
- **(*CTO*)** CTO categorized item; lead time for delivery is different from other item.
- RAID50/60 is not available due to the limitation of the number of internal disks.
- RAID configuration is not available between internal drives under different RAID Controllers.
- RAID settings at the server delivery are done only to the internal disk drives at Slot #0 to Slot #3.
- Not configured into the server (not BTO) for the 2nd RAID Controller and 5th and beyond internal disk drives.

5 Optical Drive

Up to 1 Optical Drive internal) can be connected

Category	Product Name/Description	Part Number
Internal	**Internal DVD-ROM Drive** Slim DVD-ROM Drive, SATA	NE3351-100
	Internal DVD Super Multi Drive Slim DVD Super Multi drive	NE3351-107
	NOTE: - **Supported OS: Windows Server® 2008R2 and 2012**	

NOTE:

- Not pre-installed. Needs to order either Internal DVD-ROM Drive or Internal DVD Super Multi Drive for server maintenance and/or OS installation purpose:

6 PCI Card

Please refer to “Available Slots” of “References” section regarding PCI Slots; Available Slots and Installation Limitations

PCI Card Customized Configuration Service

Product Name/Description	Part Number
Customized Service: PCI Cards	NE3300-SV401

NOTE:

- When requiring different PCI cards configuration from the standard BTO Configuration at the server delivery, needs to order this customized service.
- Please order this customized service when no HDD is included in the ordered configuration for FC SAN boot.
- Please refer to PCI Card: Priority/Order of Installation for installation rules at BTO configuration.

6.1 Network Interface Controller

Category	Product Name/Description	Part Number
GbE	**1000BASE-T Adapter (1 port))** Broadcom BCM5718 PCIe 2.0(x4) (Performance: PCIe 2.0(x1)) Low Profile	NE3304-138
	1000BASE-T Adapter (2 port) Broadcom BCM5718 PCIe 2.0(x4) (Performance: PCIe 2.0(x1)) Low Profile	NE3304-132
	1000BASE-T Adapter (4 port) Broadcom BCM5719 PCIe 2.0(x4), Low Profile **NOTE:** - Network cables with RJ-45 plug covers cannot be used.	NE3304-133
10GbE	**10GBASE Adapter (SFP+/2ch)** Broadcom NetXtreme II BCM57711 10G SFP+ Dual Port Network Interface Card PCIe 2.0(x8), Low Profile **NOTE:** - NE3304-129 (SFP+ Module (10G-SR)) needs to be ordered per one port (max. 2) - Connection with Twinax cable is available. Please refer to the Users guide for the validated cable	NE3304-128
	SFP+ Module (10G-SR) 1 x SFP+ Module for NE3304-128	NE3304-129

NOTE:

- Network Interface Controller not pre-installed. Needs to order at least 1 card.
- WOL (Wake On LAN) / PXE (Preboot eXecution Environment) boot is supported by 1000BASE-T Adapter (1 port) (NE3304-138) and 1000BASE-T Adapter (2 port) (NE3304-132.
- When booting OS by PXE boot, please select IPv4 for network settings.

NIC Teaming feature – NIC Teaming and bonding features

NIC Teaming and bonding features are available with this server to provide network redundancy and load balancing for higher network reliability and optimized network loads.

Under Windows Server 2008 R2 SP1 environment, teaming feature is supported with BASP (Broadcom Advanced Server Program). Under Windows Server 2012 (and later) and Linux environement, network redundancy is supported with Taming/Bonding functions supported by OS.

See the table below for supported network interfaces, operation mode and number of teams.

◆Windows Teaming

(1) Windows Server 2008 R2 SP1

Network Interface	Operation Mode	Configuration	Number of Teams
NE3304-138/-132/-133 (1000BASE)	• Smart Load Balancing and Failover (without Standby Member feature) • Smart Load Balancing (Auto-Failback Disable) (with Standby Member feature) • FEC/GEC Generic Trunking	• 4 ports in on card • 4 ports among multiple cards	• Up to 4 ports per one team • Up to 4 teams per one system
NE3304-128 (10GBASE-SR)	• Smart Load Balancing and Failover (without Standby Member feature) • Smart Load Balancing (Auto-Failback Disable) (with Standby Member feature) • FEC/GEC Generic Trunking	• 2 ports in one card • 2 ports among multiple cards	• Up to 2 ports per one team • Up to 4 teams per one system

NOTE:

- Teaming with one port shared among multiple teams: Not supported
- Teaming between 1000BASE-T card and 10GBASE-SR card: Not supported
- Teaming is NOT available when using Windows Server 2008 R2 SP1 ServerCore
- Can mix 1000BASE-T teaming and 10GBASE-SR teaming within one system. In this case, up to 4 teams are supported per one system.
- In case of using 10GBASE-SR:
  - Needs to set less than 4000byte for Jumbo frame, in case of Flow Control set other than “Disabled”
- Teaming of the port using iSCSI: Not supported

(2) Windows Server 2012 (and later)

Network Interface	Operation Mode	Configuration	Number of Teams
NE3304-138/-132/-133 (1000BASE-T)	• Generic or static Teaming • Dynamic teaming • Switch-independent	• 4 ports in on card • 4 ports among multiple cards	• Up to 4 ports per one team • Up to 16 teams
NE3304-128 (10GBASE-SR)		• 2 ports in one card • 2 ports among multiple cards	• Up to 2 ports per one team • Up to 8 teams

NOTE:

- Teaming with one port shared among multiple teams: Not supported
- Teaming between 1000BASE-T card and 10GBASE-SR card: Not supported
- Teaming of the port using iSCSI: Not supported

◆Linux Bonding

Network Interface	Operation Mode	Configuration	Number of Bonding
NE3304-138/-132/-133 (1000BASE-T)	Recommend: active-backup (fault-tolerance)	• 2 ports in one card • 2 ports among multiple cards	• Up to 2 ports per one bonding • Up to 16 teams
NE3304-128 (10GBASE-SR)	Recommend: active-backup (fault-tolerance)	• 2 ports in one card • 2 ports among multiple cards	• Up to 2 ports per one bonding • Up to 8 teams

NOTE:

- Teaming between 1000BASE-T card and 10GBASE-SR card: Not supported
- Concatct to our sales representative for other than Active-backup
- Can mix 1000BASE-T bonding and 10GBASE-SR bonding within one system

6.2 Using iSCSI (for data usage)

Please refer to iStorage web site regarding the connection to iStorage Series via iSCSI, and to EXPRESSCLUSTER web site for cluster configuration.

See the table below for supported network interface and OS combinations.

Network Interface		Operating System
10GbE	NE3304-128	Windows Server 2008 R2 SP1/ Windows Server 2012 / Windows Server 2012 R2 /RHEL / VMware

RHEL : Red Hat Enterprise Linux

NOTE:

- NIC Teaming/Bonding features are not supported on iSCSI interfaces.
- SAN Boot: please contact to our sales representative for details.
- When booting OS by iSCSI, please select IPv4 for network settings.

6.3 External Storage Controller

6.3.1 RAID Controller

Category	Product Name/Description	Part Number
Controller	**External RAID Controller (1GB, RAID 0/1/5/6/10/50/60)** LSI MegaRAID SAS 9286CV-8e RAID0/1/5/6/10/50/60, 1GB Cache, External 8 port (4x2 connector), PCIe 3.0(x8), SAS 6Gb/s, Low Profile	NE3303-H001
Backup Unit	**Flash Backup Unit** Flash Backup Unit (for NE3303-H001)	NE3303-H002

NOTE:

- This External RAID Controller [NE3303-H001] can connect to NEC's Disk Expansion Unit (2U [N8192-101][N8192-102]).

  ・SAS Cable (2m): [K410-191(02)]

  ・Disk Expansion Unit can be placed just above or just below the server.
- BTO configuration at the server delivery does NOT include RAID configuration. Please do RAID configuration by using utility setting.
- By using Flash Backup Unit, Write Back is available.
- When configuring Flash Backup Unit, the External RAID Controller is not BTO configured at the server delivery. In order to configure Flash Backup Unit in BTO, please order NE3300-SV401 (Customized Service: PCI Cards)
- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 sith 2x HDDs in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- It is recommended to set RAID array configuration drives less than eight in order to minimize the risk of becoming multiple hard drives failure.
- When using VMware ESXi5.5, please download the latest SMI-S provider from our web site.

6.3.2 Fibre Channel / SAS Controller

Category	Product Name/Description	Part Number
Fibre Channel	**Fibre Channel Controller (8G/1 port)** Emulex LightPulse LPe1250-F8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0(x8), Low Profile	NE3390-153
	Fibre Channel Controller(8G/2 port) Emulex LightPulse LPe12002-M8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0(x8), Low Profile	NE3390-154
	Fibre Channel Controller (16G/1 port) Emulex LightPulse LPe16000B-M6 Host Bus Adapter 16Gb/s, Optical, PCIe 3.0(x8), Low Profile / Full Height **Not supported with VMware® ESXi 5.1 U2**	NE3390-157A
	Fibre Channel Controller (16G/ 2port) Emulex LightPulse LPe16002B2-M6 Host Bus Adapter 16Gb/s, Optical, PCIe 3.0(x8), Low Profile / Full Height **Not supported with VMware® ESXi 5.1 U2**	NE3390-158A
SAS	**SAS Controller** LSI SAS9212-4i4e Host Bus Adapter 6Gb/s SAS, PCIe 2.0(x8), Low Profile	NE3303-142

NOTE:

- Connection to iStorage M Series via SAS under Linux environment: Not supported
- Please refer to the iStorage website for the supported device and OS by iStorage series
- Please refer to the EXPRESSCLUSTER web site for cluster configuration
- The type and length of the cable depends on Fibre Channel (FC) link speed. Please refer to the Technical Guide for the details.
- Depending on the FibreChannel(FC) link speed, the available cable type and/or length may differ. Please refer to the users guide for the Fibre Channel Controller.
- As 2m cables are used to connect SAS Controller and Device Expansion Unit, the following remarks should be noted when using Device Expansion Unit.
  - Device Expansion Unit (2U): N8141-75/-59

    Can be mounted with the space less than 3U with the server (on top or under).
    - When moungint Device Expansion Unit on top or just under the server, all devices (1-4) can be connected.
    - When mounting Device Expansion Unit with 1 – 3U space, device 3 and 4 (left side of the Unit in fromt view / connector 3 and 4 of right side from rear view) can be connected. Among the space between the Device Expansion Unit and the server, the item with less than 660mm in lengh can be mounted.
  - Device Expansion Unit (1U): N8141-74/-48

    Can be mounted only on top or just under the server.
    - Only the device 2 (left side of the Unit in front view / connecter 2 of right side from rear view) can be connected

6.4 PCIe SSD

Super high speed SSD board to be installed in PCIe slot

Product Name/Description	Part Number
1.1TB PCIe SSD (*CTO*) HGST FlashMAX II Performance 1100GB MLC Card PCIe 2.0(x8), Low Profile **Supported OS: Windows Server® 2012, Windows Server® 2012 R2**	NE3318-H001F

NOTE:

- (*CTO*) CTO categorized item; lead time for delivery is different from other item. Please contact to our sales representative for the delivery schedule.
- Warranty provided earlier until reaching to the end of the specified lifetime for re-writhing or until the period defined in the warranty notice. Please check regularly the remained lifetime for re-writing using the utility of this PCIe SSD (FlashMAX® II Manager).
- 3GB main memory is required per one 1.1TB PCIe SSD
- Not supporting Server Core.
- This PCIe SSD is for NEC's solution set product "Database Solution with Microsoft SQL Server (including "PSAM", NEC PCIe SSD Appliance for Microsoft® SQL Server®)" with the following condition for use:
  - In order to optimize the system performance, please order the Service Product below, one per each server
  - Supporting Storage Pool/Mirror Volume configuration only
  - Page File not supported

  Please contact to our sales representative for the use other than the above.

PSAM Customized Service

Product Name/Description	Part Number
PSAM Customized Service	NE3300-SV406

7 Other Add-in Components

7.1 Power Supply Unit

7.1.1 Number of Power Supply Unit

See the table below for the required number of Power Supply Unit per voltage/configuration/redundancy.

Voltage	Model	Power Supply Unit	# of CPU	Number of Power Supply Unit		
				No-redundancy	N+1	2N
200V	A2040b	1000W	2/3/4	2	3	4
		800W	2	2	3	4
			3/4	3	4	Not available
	A2020b	1000W	2	2	3	4
		800W	2	3	4	Not available
	A2010b	1000W	1	2	3	4
		800W	1	2	3	4
	A1040b	1000W	1	1	2	2
			2/3/4	2	3	4
		800W	1/2	2	3	4
			3/4	3	4	Not available
100V	A2040b	1000W	2/3	2	3	4
			4	3	4	Not available
		800W	2	2	3	4
			3/4	3	4	Not available
	A2020b	1000W	2	3	4	Not available
		800W	2	3	4	Not available
	A2010b	1000W	1	2	3	4
		800W	1	2	3	4
	A1040b	1000W	1	1	2	2
			2/3	2	3	4
			4	3	4	Not available
		800W	1/2	2	3	4
			3/4	3	4	Not available

NOTE:

- When selecting Power Supply Unit, recommend to consider potential add-on of the optional products in the future.
- Redundancy can be selectable; no-redundancy, N+1 and 2N:

  ・N+1: When one Power Supply Unit fails, the operation can continue.

  ・2N: Configuring 2 power supply groups, each consisting of 1 or 2 power supply unit. When one group fails, the operation can continue with another group. In this case, power supply is redundant between PSU#1 and PSU#2, or PSU#3 and #4. Please configure power supply path appropriately.
- Hot-plug supported. Can replace Power Supply Unit without stopping the system (under redundant configuration securing enough power during replacement).

7.1.2 Power Supply Unit

AC Power Supply Unit

Product Name/Description	Part Number
Power Supply Unit (800W) Hot-plug, 80 PLUS Platinum certified	NE3381-87
Power Supply Unit (1000W) Hot-plug, 80 PLUS Platinum certified	NE3381-88

NOTE:

- Up to 4 units can be installed.
- Power Supply Unit includes Cable Tie to prevent dropping AC cable.
- Cannot mix different Power Supply Unit
- Cannot mix 100V/200V in one server
- Please prepare AC cables compliant to the regulation in each geography.

7.2 Redundant Fan Kit

Product Name/Description	Part Number
Redundant Fan 2x fan module	(standard)

NOTE:

- 2 units are installed as standard (no add-on available).
- Hot-plug supported

7.3 Trusted Platform Module Kit

Product Name/Description	Part Number
Trusted Platform Module Kit Module needed to use Windows BitLocker™ Drive Encryption feature	NE3315-19

NOTE:

- This is to be shipped only at the delivery of the server (cannot be add-on later).
- When installed in the server, cannot be removed later.
- Need to enable “TMP Support” in BIOS Set-up Menu to use this item.
- Need to save “recovery password” for Windows BilLocker Drive Encription, as the password is necessary to recover the data when replacing the hardware in failure.

7.4 Internal Flash Memory

Product Name/Description	Part Number
Internal Flash Memory With this kit, EXPRESSBUILDER can be started from POST.	NE3315-07

NOTE:

- When this flash memory is ordered and shipped with the server, the data in the EXPRESSBUILDER is copied into this kit.
- When this flash memory is ordered and shipped separately, the data must be copied from the EXPRESSBUILDER DVD to the flash memory after installing it in the server for use.

8 Add-on Components

8.1 17-inch LCD Console Unit

Category		Product Name/Description	Part Number
Drawer w/ KVM	**Drawer**	**17-inch LCD Console Drawer (8port)** 17-inch LCD, US 83-keys Keyboard, Optical mouse, 8 port KVM switch, 1U height, BLACK	N8143-106F
	Cable	**Switch Unit Connection Cable Set (USB, 1.8m)** 1.8 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(1A)
		Switch Unit Connection Cable Set (USB, 3m) 3 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(03)
		Switch Unit Connection Cable Set (USB, 5m) 5 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(05)
Drawer w/o KVM	**Drawer**	**17-inch LCD Console Unit 1U** 17-inch LCD, US 83-keys Keyboard, Optical mouse, 1U height, 4-pin USB B to 4-pin USB A cable 2 m, PS/2 Y-splitter cable 2m, 15-pin mini D-sub VGA cable 2 m, BLACK	N8143-105F
		17inch LCD Console Drawer (1port) 17-inch LCD, US 103-keys Keyboard with 10-key, Touch pad with 3-button, 1U height, 4-pin USB B to 4-pin USB A cable 1.8 m, Two PS/2 cable 1.8 m, 15-pin mini D-sub VGA cable 1.8 m	N8140-108F
	Keypad	**Keyboard Unit (JP)** JP 108-keys Keyboard with 10-key for N8143-84F 17inch LCD Console Drawer (1port)	N8143-109
		Keyboard Unit (UK) UK 104-keys Keyboard with 10-key, for N8143-84F 17inch LCD Console Drawer (1port)	N8143-111

8.2 KVM Switch

Category		Product Name/Description	Part Number
KVM Switch		**Server Switch Unit (8Server)** 1U USB 8 port KVM Switch, BLACK	N8191-14F
Cable		**Switch Unit Connection Cable Set (USB,1.8m)** 1.8 m, 1 x 15-pin mini D-sub - 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(1A)
		Switch Unit Connection Cable Set (USB,3m) 3 m, 1 x 15-pin mini D-sub - 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(03)
		Switch Unit Connection Cable Set (USB,5m) 5 m, 1 x 15-pin mini D-sub - 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(05)
	Cascading	**Switch Unit Connection Cable 1.8 m** 1.8 m, 1 x 15-pin mini D-sub - 1x 15-pin mini D-Sub / 2x PS/2	K410-119(1A)

8.3 Front Bezel

A2040b, A2020b, A2010b

Product Name/Description	Part Number
Front Bezel (A2040b/A2020b/A2010b)	NE3446-H001

A1040b

Product Name/Description	Part Number
Front Bezel (A1040b)	NE3346-H001

8.4 Cable Arm

With this component at rear side of the server, various cables are compactly combined.

Product Name/Description	Part Number
Cable Arm（70mm） Including slide rail attachment Able to combine around 18 cables (except AC Power Cable, such as LAN, FC and USB)	NE3343-H001
Cable Arm（110mm） Including slide rail attachment Able to combine around 32 cables (except AC Power Cable, such as LAN, FC and USB)	NE3343-H002

NOTE:

- Need to use Slide Rail Attachment to use Cable Arm. This makes server depth longer, as shown in the Dimensions.
- For calculation, considering LAN (UTP: without shield) is φ5mm in diameter at average, 1x FC cable corresponds to 1x LAN cable, 1x SAS cable corresponds to 2x LAN cables, 1x SUV cable corresponds to 4x LAN cables and 1 x USB Cable corresponds to 1 x LAN cable.
- Table for quick reference:

Model	A2040b/A2020b/A2010b		A1040b	
	Cable Arm (70mm)	Cable Arm (110mm)	Cable Arm (70mm)	Cable Arm (110mm)
Max. cable capacity (by no. of LAN cable)	**18**	**32**	**18**	**32**
Management LAN (mandatory required)	**2**	**2**	**1**	**1**
SUV Cable *1 (by no. of LAN cable)	**4**	**4**	**4**	**4**
Opne calbe capacity (byno. Of LAN cable)	**12**	**26**	**13**	**27**

[1] 1 x SUV Cable corresponds to 4 x LAN cable.

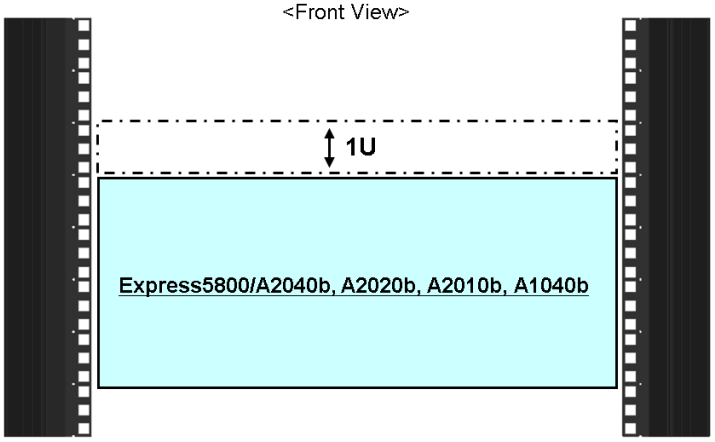
Remarks:

- With Cable Arm (110mm), the unit with more than 670mm in depth (from the front) cannot be located on top of the server. Otherwise, need to have 1U between the unit and the server.

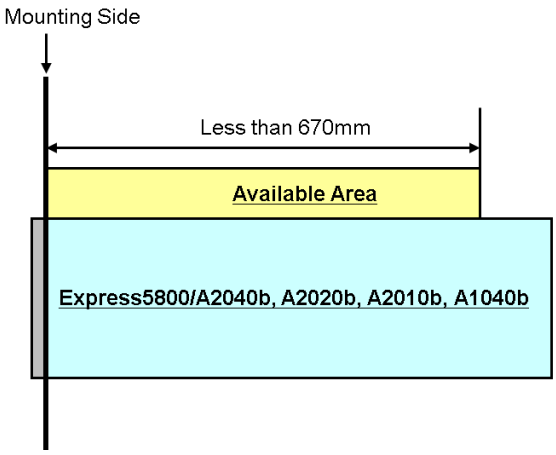
(Please refer to the illustoratinos below.)

With Cable Arm (110mm) [NE3343-H002], the unit with more than 670mm in depth (from the front) cannot be located on top of the server. Otherwise, need to have 1U between the unit and the server.

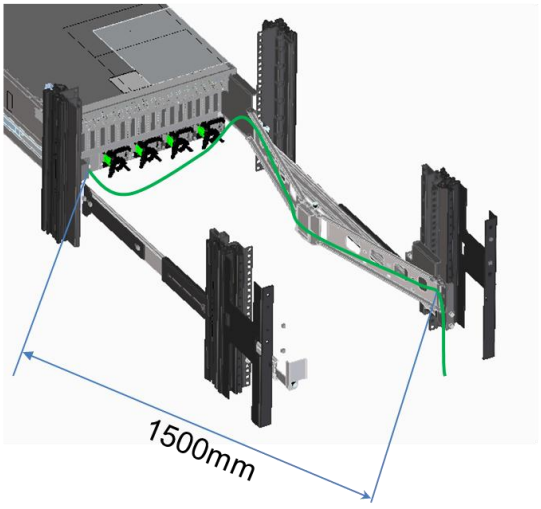
<Front View>



<Side View>



Note for the Cable Length:
More than 1,500mm is required for the length of a cable in a cable arm at the rear side of the server. Please select the appropriate cables in considering the rooting.



8.5 Management Console Specifications

Need to prepare a PC for a management console meeting the following requirements:

	Specifications
CPU	More than Pentium4 1.3GHz
Memory	More than 2GB (Memory for OS and browser + memory for Java + more than 1GB)
Network	100BASE-TX equivalent and above (bandwidth more than 10Mbps)
HDD	More than 40GB free space
Resolution	More than 1152 x 864
Supported browser	Windows - Microsoft Internet Explorer 7.0, 8.0, 9.0, 10.0（11 not supported） * with IPv6 - Microsoft Internet Explorer 10.0 Linux - Firefox ESR17
Java	Oracle Java JRE7 * 32bit version J2SE Runtime Environment
Client OS	Windows - Windows Vista(SP2) - Windows 7 - Windows 8 - Windows Server 2003 R2 (SP2) - Windows Server 2008 - Windows Server 2008 R2 (SP1) - Windows Server 2012 * with IPv6 - Windows 7 - Windows 8 - Windows Server 2012 Linux - Red Hat Enterprise Linux WS(version 6.0 or later) - Red Hat Enterprise Linux(version 6.0 or later)

NOTE:

- For A2040b/A2020b/A2010b, management console needs to be connected to Management LAN of both MGB#1 and MGB#2.
- For A1040b, management console needs to be connected to Management LAN of MGB#1
- LAN environment/console PC is not pre-installed. Needs to prepare separately.
- Needs to have a management console in addition to VGA console. Please prepare at least 1 console. Can be shared by multiple servers.

References

■CPU

CPU: BTO Configuration Rule

- CPUs are to be installed in the priority order of CPU1 => CPU2 => CPU3 => CPU4.

■Memory

1. Memory Riser Card: Priority/Order of Installation

1−1.A2040b

1 or 2 Memory Riser Cards are able to be installed per CPU. In case of 4CPU configuration, up to 8 Memory Riser cards are able to be installed

The priority/order of instalaltion depends on the models:

(1) Standard Model

Depending on the number of the installed CPU and the ordered Memory Riser Card, Memory Riser Cards will be installed in the following priority/order.

(Need to install at least one Memory Riser Card.)

# of CPU	Memory Riser Card Slot							
	#1	#2	#3	#4	#5	#6	#7	#8
2	1	3	2	4	–	–	–	–
3	1	4	2	5	3	6	–	–
4	1	5	2	6	3	7	4	8

(2) COPT Supported Model: Standard BTO Configuration (Centralized Mode)

Depending on the number of the installed CPU and the ordered Memory Riser Card, Memory Riser Cards will be installed in the following priority/order. This priory/order corresponds to the case using “Centralize” for Core Optimization Mode.

(Need to install at least one Memory Riser Card.)

# of CPU	Memory Riser Card Slot							
	#1	#2	#3	#4	#5	#6	#7	#8
2	1	2	3	4	–	–	–	–
3	1	2	3	4	5	6	–	–
4	1	2	3	4	5	6	7	8

(3) COPT Supported Model: With "Customized Service: Distribution Mode for COPT (NE3300-SV101)" is ordered (Decentralized Mode)

Depending on the number of the installed CPU and the ordered Memory Riser Card, Memory Riser Cards will be installed in the following priority/order. This priory/order corresponds to the case using "Decentralize" for Core Optimization Mode.

(Need to install at least one Memory Riser Card.)

# of CPU	Memory Riser Card Slot							
	#1	#2	#3	#4	#5	#6	#7	#8
2	1	3	2	4	–	–	–	–
3	1	4	2	5	3	6	–	–
4	1	5	2	6	3	7	4	8

1-2.A2020b

Up to 8 Memory Riser cards are able to be installed

Depending on the number of the ordered Memory Riser Card, Memory Riser Cards will be installed in the following priority/order.

(Need to install at least one Memory Riser Card.)

# of CPU	Memory Riser Card Slot							
	#1	#2	#3	#4	#5	#6	#7	#8
2	1	3	2	4	5	7	6	8

1-3.A2010b

Up to 4 Memory Riser cards are able to be installed

Depending on the number of the ordered Memory Riser Card, Memory Riser Card will be installed in the following priority/order.

(Need to install at least one Memory Riser Card.)

# of CPU	Memory Riser Card Slot			
	#1	#2	#3	#4
1	1	2	3	4

1-4.A1040b

1 or 2 Memory Riser Cards are able to be installed per CPU. In case of 4CPU configuration, up to 8 Memory Riser cards are able to be installed

Depending on the number of the installed CPU and the ordered Memory Riser Card, Memory Riser Cards will be installed in the following priority/order.

(Need to install at least one Memory Riser Card.)

# of CPU	Memory Riser Card Slot							
	#1	#2	#3	#4	#5	#6	#7	#8
1	1	2	–	–	–	–	–	–
2	1	3	2	4	–	–	–	–
3	1	4	2	5	3	6	–	–
4	1	5	2	6	3	7	4	8

2. Memory on the Memory Riser Card (DIMM): Priority/Order of Installation

The priority/order to install DIMM on a Memory Riser Card depends on memory configuration.

Memory Configuration Mode consists of 2; “Independent Mode” for high performance and “Lockstep Mode” for high availability

Under each mode, there are 2 features to improve availability further; “Memory Mirroring” and “Memory Rank Sparing”.

2-1. Lockstep Mode

“Lockstep Mode” supports Error Detect/Correct toward 2x DRAM failures (DDDC) by having a pair of memory defined among 2x memory channels (CH0 and CH1 or CH2 and CH3) operating in parallel. To use this mode, need to order memory set including 2 DIMMs per set.

NOTE:

- Cannot mix RDIMM and LRDIMM in a server
- Lockstep Mode is a standard setting at the server delivery.

For DIMM installation priority/order, (1) to install larger DIMM first, and (2) to install DIMMs to the sockets in the priority/order shown in the figure below.

2-2. Independent Mode

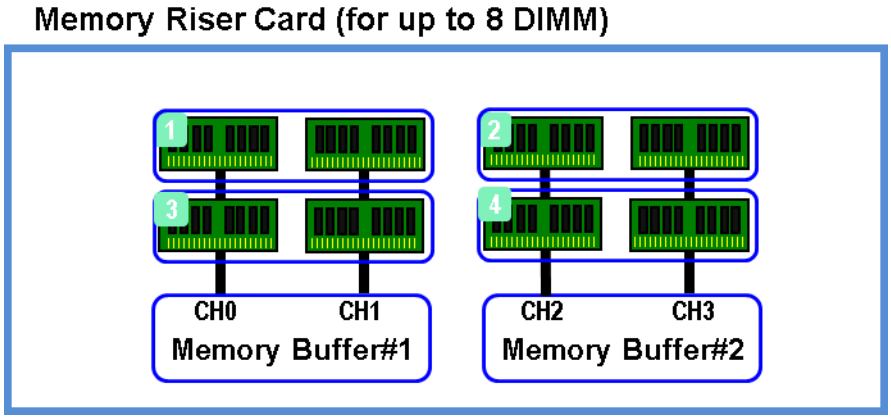
“Independent Mode” provides more performance by having 4 memory channels operate independently. This supports Error Detect/Correct toward 1x DRAM failure (SDDC). To use this mode, need to order memory set including 2 DIMMs per set.

NOTE:

- Cannot mix RDIMM and LRDIMM in a server
- Lockstep Mode is a standard setting at the server delivery. To use Independent Mode, need to change the mode from BIOS set-up menu.

For DIMM installation priority/order, (1) to install larger DIMM first, and (2) to install DIMMs to the sockets in the priority/order shown in the figure below. Otherwise, memory might not be able to be identified.

DIMM Installation Order for Independent Mode (only) /Lockstep Mode (only)



2-3. Memory Mirroring

"Memory Mirroring" provide redundancy by writing the same data into 2x memory among different memory buffers on a Memory Riser Card. To use this feature, need to order memory set including 4 DIMMs per set

Memory Mirroring for each Memory Configuration Mode:

Independent Mode: Mirroring between CH0 and CH2, CH1 and CH3

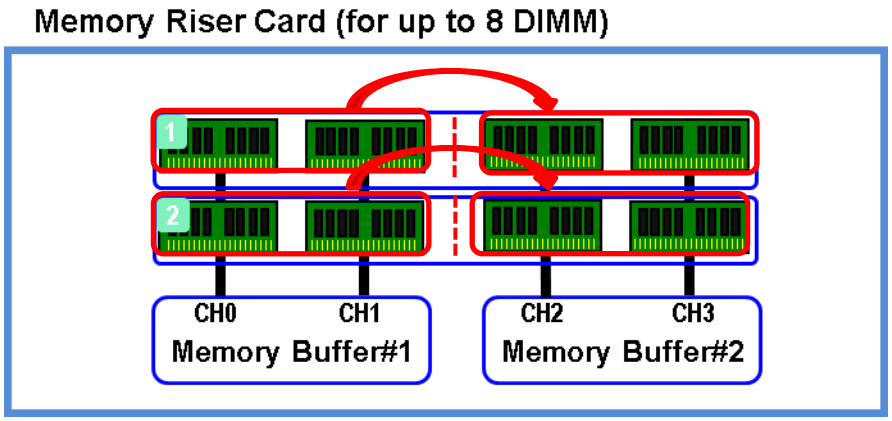
Lockstep Mode: Mirroring between memory pair on CH0 and CH1 AND memory pair on CH2 and CH3

NOTE:

- Cannot mix RDIMM and LRDIMM in a server
- When using Memory Mirroring, the available memory capacity becomes half of physical capacity.
- Lockstep Mode + Memory Mirroring is a standard setting at the server delivery. To use Independent Mode, need to change the mode from BIOS set-up menu.
- Cannot use both Memory Mirroring and Memory Rank Sparing at the same time.

For DIMM installation priority/order, (1) to install larger DIMM first, and (2) to install DIMMs to the sockets in the priority/order shown in the figure below.

DIMM Installation Order for Memory Mirroring



2.4 Memory Rank Sparing

"Memory Rank Sparing" is the feature to keep operation; with having one of two memory ranks in one memory channel as a spare, when detecting errors at memory rank in operation, automatically switching to spare rank. To use this feature, need to order memory set including 4 DIMMs per set

Memory Rank Sparing for each Memory Configuration Mode:

Independent Mode: One of two memory rank in each memory channel is assigned as a spare memory rank

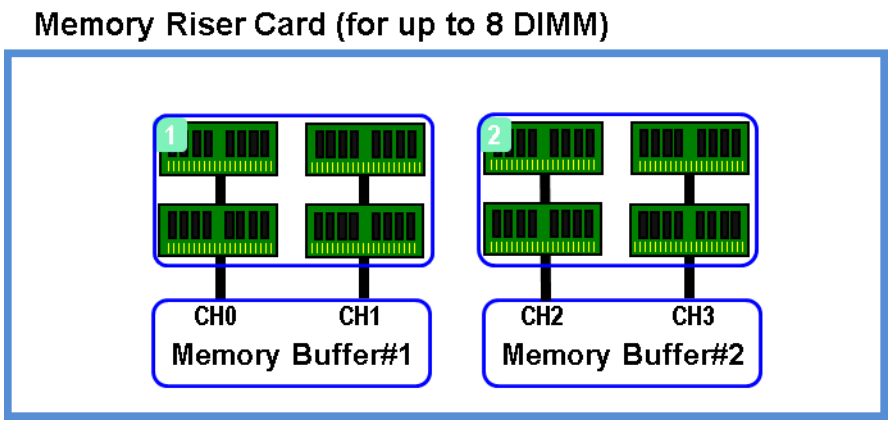
Lockstep Mode: Either a memory pair on CH0 and CH1 OR a memory pair on CH02 and CH03 is assigned as a spare memory rank.

NOTE:

- Cannot mix RDIMM and LRDIMM in a server
- When using Memory Rank Sparing, the available memory capacity reduces by the capacity of spare memory rank:
  - Available Memory Capacity:
    - 1/2 of physical memory (8GB RDIMM)
    - 3/4 of physical memory (16GB RDIMM)
    - 7/8 of physical memory (32GB LRDIMM)
    - 3/4 of physical memory (64GB LRDIMM)
- Lockstep Mode + Memory Rank Sparing is a standard setting at the server delivery. To use Independent Mode, need to change the mode from BIOS set-up menu.
- Cannot use both Memory Mirroring and Memory Rank Sparing at the same time.

For DIMM installation priority/order, (1) to install larger DIMM first, and (2) to install DIMMs to the sockets in the priority/order shown in the figure below.

DIMM Installation Order for Memory Rank Sparing



3. Memory in the Server: Priority/Order of Installation

Basic Rule:

- When mixing different capacity of memory, will install larger capacity memory first.
- In a Memory Riser Card, memory installed according to the rule shown in the previous section.

3-1. A2040b

(1) Standard Model

Memory will be installed equally among each Memory Riser Card.

(2) COPT Supported Model: Standard BTO Configuration (Centralized Mode)

Memory will be installed to the first younger 2 Memory Riser Cards. Follows the same rule afterwards,

(3) COPT Supported Model: With "Customized Service: Distribution Mode for COPT (NE3300-SV101)" is ordered (Decentralized Mode)

Memory will be installed equally among each Memory Riser Card.

3-2. A2020b

Memory will be installed equally to Memory Riser Card #1 to #4, then move to Memory Riser Card #5 to #8.

3-3. A2010b

Memory will be installed equally to Memory Riser Card #1 to #2, then move to Memory Riser Card #3 to #4.

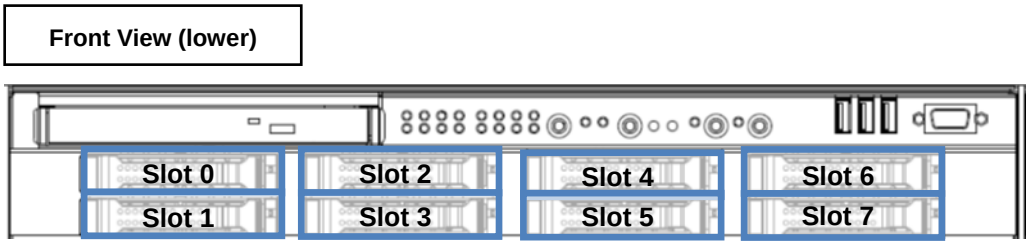
3-4. A1040b

Memory will be installed equally among each Memory Riser Card.

■Internal Drive

Internal Drive: Priority/Order of Installation

At the initial server delivery, internal drives are installed with the following priority/order. If the ordered configuration is not in the scope of the rule, the drive will be delivered as not configured.



◆1x RAID Controller

・Slot 0 => Slot 1 => Slot 2 => Slot 3 => Slot 4 => Slot 5 => Slot 6 => Slot 7

◆2x RAID Controller

✓ For the 1st RAID Controller

・Slot 0 => Slot 1 => Slot 2 => Slot3

✓ For the 2nd RAID Controller

・Slot 4 => Slot 5 => Slot 6 => Slot 7

However, the 2nd RAID Controller and the drives under the controller are not installed (configured) at the server delivery.

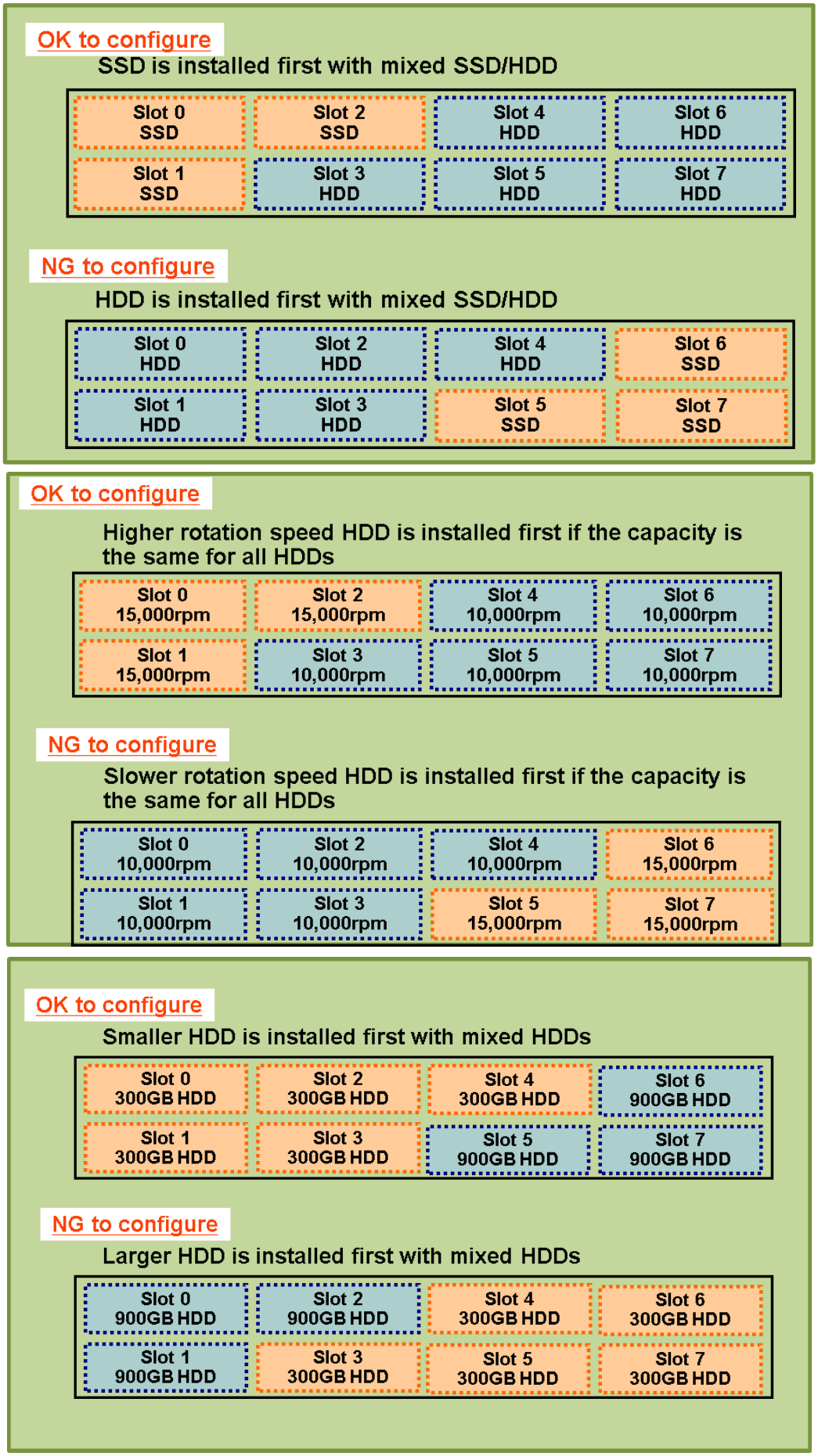
Conditions to Mix Internal Drives

- Mixing SSDs with different capacity or mixing HDDs with the same rotation speed is supported in the BTO configuration.
- Mixing HDDs with different rotation speed and mixing HDD and SSC is NOT supported in the BTO configuration.

- Cannot mix within the same RAID group (pack)
- When defining hot spare disk under mixed drive configuration, need to set Dedicated Hot Spare per RAID group. Global Hot Spare is not available.
- Please refer to the following for further details.

With different internal drives

- For 1x RAID Controller, 2 kinds of HDDs or HDD/SSD can be mixed.
  - ◆ When SSD/HDD mixed, SSDs are installed first according to the above priority/order, then HDDs are installed in the remaining drive bays.
  - ◆ When SSDs with different capacity are mixed, larger SSDs are installed first.
  - ◆ When HDDs with different rotation speed, higher speed HDDs are installed first. If the speed is the same, smaller capacity HDDs are installed first.


OK to configure
SSD is installed first with mixed SSD/HDD
Slot 0 SSD
Slot 2 SSD
Slot 4 HDD
Slot 6 HDD
Slot 1 SSD
Slot 3 HDD
Slot 5 HDD
Slot 7 HDD
NG to configure
HDD is installed first with mixed SSD/HDD
Slot 0 HDD
Slot 2 HDD
Slot 4 HDD
Slot 6 SSD
Slot 1 HDD
Slot 3 HDD
Slot 5 SSD
Slot 7 SSD
OK to configure
Higher rotation speed HDD is installed first if the capacity is the same for all HDDs
Slot 0 15,000rpm
Slot 2 15,000rpm
Slot 4 10,000rpm
Slot 6 10,000rpm
Slot 1 15,000rpm
Slot 3 10,000rpm
Slot 5 10,000rpm
Slot 7 10,000rpm
NG to configure
Slower rotation speed HDD is installed first if the capacity is the same for all HDDs
Slot 0 10,000rpm
Slot 2 10,000rpm
Slot 4 10,000rpm
Slot 6 15,000rpm
Slot 1 10,000rpm
Slot 3 10,000rpm
Slot 5 15,000rpm
Slot 7 15,000rpm
OK to configure
Smaller HDD is installed first with mixed HDDs
Slot 0 300GB HDD
Slot 2 300GB HDD
Slot 4 300GB HDD
Slot 6 900GB HDD
Slot 1 300GB HDD
Slot 3 300GB HDD
Slot 5 900GB HDD
Slot 7 900GB HDD
NG to configure
Larger HDD is installed first with mixed HDDs
Slot 0 900GB HDD
Slot 2 900GB HDD
Slot 4 300GB HDD
Slot 6 300GB HDD
Slot 1 900GB HDD
Slot 3 300GB HDD
Slot 5 300GB HDD
Slot 7 300GB HDD

Standard RAID Configuration at the Initial Server Delivery

Standard RAID configuration for the same type of internal drives at the initial server delivery is as follows

RAID 50 and RAID 60 are not supported for BTO configuration

Controller	(reference section)	# of Drive	Standard RAID Configuration
NE3303-168 or NE3303-173 (Q'ty 1)	**4.2.1 4.2.2 (up to 8 drives)**	1	RAID 0 (Q'ty 1)
		2	RAID 1 (Q'ty 2)
		3～8	RAID 1 (if the number of drive is odd, will set one spare drive.)
NE3303-168 or NE3303-173 (Q'ty 2)	**4.2.4 4.2.5 (Up to 4 drives)**	1	RAID 0 (Q'ty 1)
		2	RAID 1 (Q'ty 2)
		3~4	RAID 1 (if the number of drive is odd, will set one spare drive.)

NOTE:

- Up to 4 RAID group (pack) per server
- 2nd RAID Controller (and 5th and later HDDs under it): no RAID Configuration applied
- Need to order same capacity/rotation speed drives in one group (disk array) for RAID configuration at BTO configuration.
- Initial settings of RAID Controller is as follows:
  - NE3308-168: Write Back (as Flash Backup Unit included)
  - NE3308-173: Wrhite Through (in case of no additional battery)
    - When needing higher performance, recommend Write Back with additional battery.

  (Please refer to the manual attached to the RAID Controller for the setting information.)

■Connection to RDX (USB) by Device Expansion Unit

Conditions to connect to RDX(USB)

- When using Device Expansion Unit (1U/2U) with RDX (USB) embedded [N8151-105], please connect to USB connector on rear side of the server. Not allowed to connect to USB connector of SUB cable.
- Please use an external USB cable of USB2.0 supported [K410-197(00)]
- 2m cable is necessary to connect between Device Expansion Unit and USB connector on rear side of the server. Therefore, please be aware of the following restrictions about the locatin of the Device Expansion Unit:
  - Device Expansion Unit [N8141-75/-59] (2U)
    - Can locate within 3U space from the top or bottom of the server
      - In case of locating directly on top or bottom of the server, all devices (device #1-#4) are available.
      - In case of locating within 1-3U space, devices on the left hand side from the front (right connecter #3, #4) from the rear) can be available. Devices within 660mm in depth can be installed between the server and the Device Expansion Unit.
  - Device Expansion Unit [N8141-74/-48] (1U)
    - Can locate directly on top or bottom of the server.
    - Devices on the left side from the front (right connecter #2 from the rear) can be available.
- Only HDD cartridge is available as Data Cartridge for Back-up (SSD cartridge is NOT available.)

Server Management

The EXPRESSSCOPE Engine SP3, integrated into the server (service processor (BMC)), provides superior remote control and system management features listed in the table below.

		Standard
Hardware Monitoring	Temperature/HDD/fan/voltage/power/ Degradation (memory/HDD etc.)	✓
	Hardware configuration information collection	✓
	Hardware event log collection	✓
Boot Monitoring	POST/BIOS stall, Booting, OS panic, Shutdown	✓[1]
Alerting	HW error, Boot error and OS panic (by SNMP, E-mail)	✓
Remote KVM (via LAN)	POST/BIOS setup, ROM utility	✓
	Boot screen, Panic screen	✓
	CUI-based screen (OS console)	✓
	GUI-based screen (OS console	✓
Remote Control (via LAN)	Remote reset/Power on-off/dump	✓
	Remote power capping	✓
	BIOS/BMC FW update	✓
	Remote BIOS setup (partial configuration only)	✓
	OS shutdown	✓[1]
	Remote media (CD/DVD/FD/USB)	✓
	CLP (Command Line Protocol) (DMTF compliant)	✓
	Remote control via Web browser (multi user login at the same time)	✓
	Scheduling (without UPS, ESMPRO/SM required)	✓[1]
Maintenance	EXPRESSSCOPE® Profile Key (Backup/restore BIOS/BMC setup information)	✓
Others	Set automatic IP address via DNS/DHCP	✓
	LDAP/Active Directory verification/user control	✓
	Clock synchronization of main unit and the RTC	✓
	Access log collection	✓
	IPv6 supported	✓[2]
BMC Failover	When master BMC fails, switch to stand-by BMC	✓[3]
Industry standard	IPMI	2.0

[1] Not supported under VMware environment
[2] IPv6 is available only for Web console, SMASH-CLP and E-Mail alerting
[3] Features to recovery EXPRESSSCOPE Engine SP3 itself. Supoprted only for A2040b/A2020b/A2010b. Reboot required to failover to stand-by BMC. Need to connect master and stand-by BMC to 2 Management LAN interface from 2 Management LAN ports.

■PCI Slot: Available Slots and Installation Limitations

A2040b (including COPT model)/A2020b/A2010b

Available Slots

Part Number	Part Name/Description	PCI Slot Specifications: PCIe Slot	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16	Max. Number of Cards for Installation: Available Slot (per CPU configuration) 4	9	13	16	Total	Note	
		PCIe 3.0	x8 lane							x4 lane		x8 lane													
		x8 socket																							
		8Gb/s																							
		Low Profile																							
		220mm >																							
NE3303-168	RAID Controller (1GB, RAID 0/1/5/6/10/50/60) (Card Perf.: PCI Express 3.0(x8))		Y	Y	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	2	2	16	To connect to internal disks Up to 2 Controllers can be installed.	Flash Backup Unit included
NE3303-173	RAID Controller (512 MB, RAID 0/1/5/6/10/50/60) (Card Perf.: PCI Express 3.0(x8))		Y	Y	–	–	–	–	–	–	–	–	–	–	–	–	–	–							Battery Backup Unit [NE3303-153] can be added
NE3303-H001	External RAID Controller (1GB, RAID 0/1/5/6/10/50/60) (Card Perf.: PCI Express 3.0(x8))		Y	Y	Y	Y	Y	Y	Y	Y*3	Y*3	Y	Y	Y	Y	Y	Y	Y	4	9	11	13		To connect to Disk Expansion Unit	Flash Backup Unit [NE3303-H002] can be added *2
NE3303-142	SAS Controller (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	Y*3	Y*3	Y	Y	Y	Y	Y	Y	Y	4	9	11	13		To connect external device units	
NE3390-153	Fiber Channel Controller (1 port) (8Gbps/Optical) (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	Y*3	Y*3	Y	Y	Y	Y	Y	Y	Y	4	9	11	13			
NE3390-154	Fiber Channel Controller (2port) (8Gbps/Optical) (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	-	-	Y	Y	Y	Y	Y	Y	Y	4	7	11	13			
NE3390-157	Fiber Channel Controller (1port) (16Gbps/Optical) (Card Perf.: PCI Express 3.0(x8))		Y	Y	Y	Y	Y	Y	Y	-	-	Y	Y	Y	Y	Y	Y	Y	4	7	11	13		For external Fiber Channel connection	
NE3390-158	Fiber Channel Controller (2 port) (16Gbps/Optical) (Card Perf: PCI Express 3.0(x8))		Y	Y	Y	Y	Y	Y	Y	-	-	Y	Y	Y	Y	Y	Y	Y	4	7	11	13			
NE3304-138	1000BASE-T Adapter (1 port) (Card Perf.: PCI Express 2.0(x1))		Y	Y	Y	Y	Y*1	Y	Y	Y	Y*1	Y	Y	Y	Y	Y	Y	Y	4	9	13	14		For LAN connection Physical Card: PCI Express 2.0(x4)	
NE3304-132	1000BASE-T Adapter(2 port) (Card Perf.: PCI Express 2.0(x1))		Y	Y	Y	Y	Y*1	Y	Y	Y	Y*1	Y	Y	Y	Y	Y	Y	Y	4	9	13	14		For LAN connection Physical Card: PCI Express 2.0(x4)	
NE3304-133	1000BASE-T Adapter (4 port) (Card Perf.: PCI Express 2.0(x4))		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	4	9	13	14		For LAN connection LAN cables with RJ-45 plug covers cannot be used	
NE3304-128	10GBASE Adapter (SFP+/2ch) (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	-	-	Y	Y	Y	Y	Y	Y	Y	4	7	11	14		For LAN connection Need to separately order SFP+ Module [NE3304-129], when necessary	
NE3318-H001F	1.1TB PCIe SSD (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	-	-	Y	Y	Y	Y	Y	Y	Y	4	7	11	12			

＊1 WOL (Wake On LAN) / PXE（Preboot eXecution Environment）boot supported
＊2 With Flash Backup Unit installed, External RAID Controller can be installed to PCI Slot#5,#8,#12 and #16 only
＊3 Used when no more x8 lane PCIe slot available

Installation Limitations due to I/O Space

Some PCI cards using I/O space has limitation regarding the number of cards to be installed. Please see the tables below.

Part Number	Part Name/Description
NE3303-168	RAID Controller (1GB, RAID 0/1/5/6/10/50/60)
NE3303-173	RAID Controller (512 MB, RAID 0/1/5/6/10/50/60)
NE3303-H001	External RAID Controller (1GB, RAID 0/1/5/6/10/50/60)
NE3303-142	SAS Controller
NE3390-153	Fibre Channel Controller (1 port) (8Gbps/Optical)
NE3390-154	Fibre Channel Controller (2port) (8Gbps/Optical)
NE3390-157	Fibre Channel Controller (1port) (16Gbps/Optical)
NE3390-158	Fibre Channel Controller (2 port) (16Gbps/Optical)

# of Available Slot	PCIe Slot #1	#3	#4	#5	#2	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16
4	No limitation				-					-				-		
9	No limitation				No limitation					-				-		
13	No limitation				Max. 3 (Max. 4 *1)					No limitation				-		
16	Max. 3				Max. 3 (Max. 4 *1)					No limitation				No limitation		

#1 For configuring 4 cards, please contact to our sales rep. for the details.

NOTE:

- Please refer to the Users Guide for the details about each card.
- “Card Perf.” Means the maximum operating performance of the card.
- If the PCI slot specification is lower than the operation performance of the cards, the card operates according to the specification of the slot.
- PCI Slot #2 to #9 are hot plug supported.

A1040b

Available Slots

Part Number	Part Name/Description	PCI Slot Specifications	PCIe Slot #1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16	Max. Number of Cards for Installation: Available Slot (per CPU configuration) 4	9	13	16	Total	Note	
		PCIe 3.0																							
		x8 lane / x4 lane / x8 lane																							
		x8 socket																							
		8Gb/s																							
		Low Profile																							
		220mm >																							
NE3303-168	RAID Controller (1GB, RAID 0/1/5/6/10/50/60) (Card Perf.: PCI Express 3.0(x8))		Y	Y	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	2	2	16	To connect to internal disks Up to 2 Controllers can be installed.	Flash Backup Unit included
NE3303-173	RAID Controller (512 MB, RAID 0/1/5/6/10/50/60) (Card Perf.: PCI Express 3.0(x8))		Y	Y	–	–	–	–	–	–	–	–	–	–	–	–	–	–							Battery Backup Unit [NE3303-153] can be added
NE3303-H001	External RAID Controller (1GB, RAID 0/1/5/6/10/50/60) (Card Perf.: PCI Express 3.0(x8))		Y	Y	Y	Y	Y	Y	Y	Y∗3	Y∗3	Y	Y	Y	Y	Y	Y	Y	4	9	12	14		To connect to Disk Expansion Unit	Flash Backup Unit [NE3303-H002] can be added *2
NE3303-142	SAS Controller (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	Y∗3	Y∗3	Y	Y	Y	Y	Y	Y	Y	4	9	12	13		To connect external device units	
NE3390-153	Fibre Channel Controller (1 port) (8Gbps/Optical) (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	Y∗3	Y∗3	Y	Y	Y	Y	Y	Y	Y	4	9	12	13		For external Fibre Channel connection	
NE3390-154	Fibre Channel Controller (2port) (8Gbps/Optical) (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	–	–	Y	Y	Y	Y	Y	Y	Y	4	7	11	13			
NE3390-157	Fibre Channel Controller (1port) (16Gbps/Optical) (Card Perf.: PCI Express 3.0(x8))		Y	Y	Y	Y	Y	Y	Y	–	–	Y	Y	Y	Y	Y	Y	Y	4	7	11	13			
NE3390-158	Fibre Channel Controller (2 port) (16Gbps/Optical) (Card Perf.: PCI Express 3.0(x8))		Y	Y	Y	Y	Y	Y	Y	–	–	Y	Y	Y	Y	Y	Y	Y	4	7	11	13			
NE3304-138	1000BASE-T Adapter (1 port) (Card Perf.: PCI Express 2.0(x1))		Y	Y	Y	Y	Y∗1	Y	Y	Y	Y∗1	Y	Y	Y	Y	Y	Y	Y	4	9	13	14		For LAN connection Physical Card: PCI Express 2.0(x4)	
NE3304-132	1000BASE-T Adapter(2 port) (Card Perf.: PCI Express 2.0(x1))		Y	Y	Y	Y	Y∗1	Y	Y	Y	Y∗1	Y	Y	Y	Y	Y	Y	Y	4	9	13	14		For LAN connection Physical Card: PCI Express 2.0(x4)	
NE3304-133	1000BASE-T Adapter (4 port) (Card Perf.: PCI Express 2.0(x4))		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	4	9	13	14		For LAN connection LAN cables with RJ-45 plug covers cannot be used	
NE3304-128	10GBASE Adapter (SFP+/2ch) (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	–	–	Y	Y	Y	Y	Y	Y	Y	4	7	11	14		For LAN connection Need to separately order SFP+ Module [NE3304-129], when necessary	
NE3318-H001F	1.1TB PCIe SSD (Card Perf.: PCI Express 2.0(x8))		Y	Y	Y	Y	Y	Y	Y	–	–	Y	Y	Y	Y	Y	Y	Y	4	7	11	12			

∗1 WOL (Wake On LAN) / PXE（Preboot eXecution Environment）boot supported
∗2 With Flash Backup Unit installed, External RAID Controller can be installed to PCI Slot#5,#8,#12 and #16 only
∗3 Used when no more x8 lane PCIe slot available

Installation Limitations due to I/O Space

Some PCI cards using I/O space has limitation regarding the number of cards to be installed. Please see the tables below.

Part Number	Part Name/Description
NE3303-168	RAID Controller (1GB, RAID 0/1/5/6/10/50/60)
NE3303-173	RAID Controller (512 MB, RAID 0/1/5/6/10/50/60)
NE3303-H001	External RAID Controller (1GB, RAID 0/1/5/6/10/50/60)
NE3303-142	SAS Controller
NE3390-153	Fibre Channel Controller (1 port) (8Gbps/Optical)
NE3390-154	Fibre Channel Controller (2port) (8Gbps/Optical)
NE3390-157	Fibre Channel Controller (1port) (16Gbps/Optical)
NE3390-158	Fibre Channel Controller (2 port) (16Gbps/Optical)

# of Available Slot	PCIe Slot #1	#3	#4	#5	#2	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16
4	No limitation				-					-				-		
9	No limitation				No limitation					-				-		
13	No limitation				Max. 4					No limitation				-		
16	Max. 3				Max. 4					No limitation				No limitation		

NOTE:

- Please refer to the Users Guide for the details about each card.
- “Card Perf.” Means the maximum operating performance of the card.
- If the PCI slot specification is lower than the operation performance of the cards, the card operates according to the specification of the slot.

Installation Limitations for VMware

For VMware environment, PCI cards have limitations as for the number of the cards to be installed, depending on the combination of the PCI cards. Please refer below for the details.

< VMware ESXi5.5>

For the Configuration with 1 x RAID Controller:

Model	CPU	Installation Limitations for VMware ESXi5.5 Environment			
		PCI Card	Limitations *1		
All: A2040b A2020b A2010b A1040b	CPU	NE3303-168 RAID Controller (1GB, RAID 0/1/5/6)	Either 1	Either 1	Either 1
		NE3303-173 RAID Controller (512MB, RAID 0/1/5/6)			
		NE3303-H001 External RAID Controller (1GB, RAID 0/1/5/6)			
		NE3304-133 1000BASE-T Card (4 port)	0	Up to 2 in total	Up to 4 in total
		NE3304-128 10GBASE Card (SFP+/2 port)			
		NE3304-138 1000BASE-T Card (1 port)	Up to 10 in total (for FC cards, up to 8 in total *2)	Up to 7 in total	Up to 4 in total
		NE3304-132 1000BASE-T Card (2 port)			
		NE3390-153 Fibre Channel Controller (8G FC, 1 port)*2			
		NE3390-154 Fibre Channel Controller (8G FC, 2 port)*2			
		NE3390-157A Fibre Channel Controller (16G FC, 1 port)*2			
		NE3390-158A Fibre Channel Controller (16G FC, 2 port)*2			

*1: Need to consider, too, the maximum number of available slots for each model & CPU counts:
=> up to 4slots with 1CPU, 9 slots with 2CPUs, 13 slots with 3CPUs, 16slots with 4CPUs
*2: For FC Cards, up to 2 cards with 1CPU, 7 cards with 2CPUs, 8 cards with 3CPUs/4CPUs

For the Configuration without RAID Controller:

Model	CPU	Installation Limitations for VMware ESXi5.5 Environment			
		PCI Card	Limitations *1		
All: A2040b A2020b A2010b A1040b	CPU	NE3303-168 RAID Controller (1GB, RAID 0/1/5/6)	0	0	0
		NE3303-173 RAID Controller (512MB, RAID 0/1/5/6)			
		NE3303-H001 External RAID Controller (1GB, RAID 0/1/5/6)			
		NE3304-133 1000BASE-T Card (4 port)	0	Up to 2 in total	Up to 4 in total
		NE3304-128 10GBASE Card (SFP+/2 port)			
		NE3304-138 1000BASE-T Card (1 port)	Up to 12 in total (for FC cards, up to 10 in total *2)	Up to 9 in total	Up to 5 in total
		NE3304-132 1000BASE-T Card (2 port)			
		NE3390-153 Fibre Channel Controller (8G FC, 1 port)*2			
		NE3390-154 Fibre Channel Controller (8G FC, 2 port)*2			
		NE3390-157A Fibre Channel Controller (16G FC, 1 port)*2			
		NE3390-158A Fibre Channel Controller (16G FC, 2 port)*2			

*1: Need to consider, too, the maximum number of available slots for each model & CPU counts:
=> up to 4slots with 1CPU, 9 slots with 2CPUs, 13 slots with 3CPUs, 16slots with 4CPUs
*2: For FC Cards, up to 3 cards with 1CPU, 8 cards with 2CPUs, 10 cards with 3CPUs/4CPUs

For the Configuration with 1 x RAID Controller:

Model	CPU	Installation Limitations for VMware ESXi5.1 Environment			
		PCI Card	Limitations *1		
All: A2040b A2020b A2010b A1040b	CPU	NE3303-168 RAID Controller (1GB, RAID 0/1/5/6)	Either 1	Either 1	Either 1
		NE3303-173 RAID Controller (512MB, RAID 0/1/5/6)			
		NE3303-H001 External RAID Controller (1GB, RAID 0/1/5/6)			
		NE3304-133 1000BASE-T Card (4 port)	0	Up to 2 in total	Up to 4 in total
		NE3304-128 10GBASE Card (SFP+/2 port)			
		NE3390-158A Fibre Channel Controller (16G FC, 2 port)*2			
		NE3304-138 1000BASE-T Card (1 port)	Up to 10 in total (for FC cards, up to 8 in total *2)	Up to 6 in total	Up to 2 in total
		NE3304-132 1000BASE-T Card (2 port)			
		NE3390-153 Fibre Channel Controller (8G FC, 1 port)*2			
		NE3390-154 Fibre Channel Controller (8G FC, 2 port)*2			
		NE3390-157A Fibre Channel Controller (16G FC, 1 port)*2			

*1: Need to consider, too, the maximum number of available slots for each model & CPU counts:
=> up to 4slots with 1CPU, 9 slots with 2CPUs, 13 slots with 3CPUs, 16slots with 4CPUs
*2: For FC Cards, up to 2 cards with 1CPU, 7 cards with 2CPUs, 8 cards with 3CPUs/4CPUs

For the Configuration without RAID Controller:

Model	CPU	Installation Limitations for VMware ESXi5.1 Environment			
		PCI Card	Limitations *1		
All: A2040b A2020b A2010b A1040b	CPU	NE3303-168 RAID Controller (1GB, RAID 0/1/5/6)	0	0	0
		NE3303-173 RAID Controller (512MB, RAID 0/1/5/6)			
		NE3303-H001 External RAID Controller (1GB, RAID 0/1/5/6)			
		NE3304-133 1000BASE-T Card (4 port)	0	Up to 2 in total	Up to 4 in total
		NE3304-128 10GBASE Card (SFP+/2 port)			
		NE3390-158A Fibre Channel Controller (16G FC, 2 port)*2			
		NE3304-138 1000BASE-T Card (1 port)	Up to 11 in total (for FC cards, up to 10 in total *2)	Up to 8 in total	Up to 4 in total
		NE3304-132 1000BASE-T Card (2 port)			
		NE3390-153 Fibre Channel Controller (8G FC, 1 port)*2			
		NE3390-154 Fibre Channel Controller (8G FC, 2 port)*2			
		NE3390-157A Fibre Channel Controller (16G FC, 1 port)*2			

*1: Need to consider, too, the maximum number of available slots for each model & CPU counts:
=> up to 4slots with 1CPU, 9 slots with 2CPUs, 13 slots with 3CPUs, 16slots with 4CPUs
*2: For FC Cards, up to 3 cards with 1CPU, 8 cards with 2CPUs, 10 cards with 3CPUs/4CPUs

■PCI Card: Priority/Order of Installation

Standard BTO Configuration:

Starting from the PCI cards with higher priority (see the table below), PCI cards are installed to the PCI slots with higher priority among the available slots per CPU configuration (see the table below). The following basic rules are applied to BTO configuration. If any other specific installation requirements, BTO configuration will not be applied.

[Basic Rules for PCI Card Installation]

- The 1st RAID Controller needs to be installed to Slot#1.
- The 2nd RAID Controller (if any) will not be installed (out of BTO configuration)
- When External RAID Controller has Flash Backup Unit (FBU), the External RAID Controller will not be installed (out of BTO configuration).
- When the number of available PCI slot is 9, up to 8x 1000BASE-T Adapter (4 port) can be installed.
- When the number of available PCI slot is 13, up to 12x 1000BASE-T Adapter (4 port) can be installed, AND PCI card requiring IO space should be 8 or less except RAID Controller.
- When the number of available PCI slot is 16, up to 15x 1000BASE-T Adapter (4 port) can be installed, AND PCI card requiring IO space should be 8 or less except RAID Controller.

Priority of PCI Cards:

Priority	Product Number	Product Name/Description	Slot for Installation
1	NE3303-168	RAID Controller (1GB)	Can install to Slot #1 only
	NE3303-173	RAID Controller (512MB)	
2	NE3304-132	1000BASE-T Adapter (2 port)	
	NE3304-138	1000BASE-T Adapter (1 port)	
3	NE3390-153	Fibre Channel Controller (8G/1 port)	
	NE3303-142	SAS Controller	
	NE3303-H001	External RAID Controller (1GB, w/o FBU)	
4	NE3390-158A	Fibre Channel Controller (16G/ 2port)	Can install to any slot other than Slot #8 and #9
	NE3390-157A	Fibre Channel Controller (16G/1 port)	
	NE3390-154	Fibre Channel Controller (8G/2 port)	
5	NE3304-128	10GBASE Adapter (SFP+/2ch)	Can install to any slot other than Slot #8 and #9
	NE3318-H001F	1.1TB PCIe SSD	
6	NE3304-133	1000BASE-T Adapter (4 port)	

Priority of PCI Slots:

High

Low

PCI Slot	Number of Available Slots (per CPU configuration)			
	4	9	13	16
# 1	Y	Y	Y	Y
# 9	N	Y	Y	Y
#10	N	N	Y	Y
#14	N	N	N	Y
# 3	Y	Y	Y	Y
# 2	N	Y	Y	Y
#11	N	N	Y	Y
#15	N	N	N	Y
# 4	Y	Y	Y	Y
# 6	N	Y	Y	Y
#12	N	N	Y	Y
#16	N	N	N	Y
# 5	Y	Y	Y	Y
# 7	N	Y	Y	Y
#13	N	N	Y	Y
# 8	N	Y	Y	Y

NOTE:

- The 2nd RAID Controller will not be installed (out of BTO Configuration)

With PCI Card Customized Configuration Service (NE3300-SV401)

Starting from the PCI cards with higher priority (see the table below), PCI cards are installed to the PCI slots with higher priority among the available slots per CPU configuration (see the table below). The following basic rules are applied to BTO configuration. If any other specific installation requirements, BTO configuration will not be applied.

Please order this customized service when no HDD is included in the ordered configuration for FC SAN boot.

Please order this customized service when connecting Flash Back-up Unit to External RAID Controller.

[Basic Rules for PCI Card Installation]

- When the number of available PCI slot is 13, PCI cards requiring IO space should be 10 at maximum.
- When the number of available PCI slot is 16, PCI cards requiring IO space should be 13 at maximum.
- The 1st RAID Controller needs to be installed to Slot#1. The 2nd RAID Controller (if any) will not be installed (out of BTO configuration)
- 1000BASE-T Adapter, 1 port and 2 port, needs to be installed to Slot#9 (or, in case of 1CPU configuration, Slot#5)
- External RAID Controller should be installed to Slot#5, #8, #12 or #16.

Priority of PCI Cards:

Priority	Product Number	Product Name/Description	Slot for Installation
1	NE3303-168	RAID Controller (1GB)	Can install to Slot #1 only
	NE3303-173	RAID Controller (512MB)	
2	NE3304-132 (1st) NE3304-138 (1st)	1000BASE-T Adapter (2 port) 1000BASE-T Adapter (1 port)	1st card can install to Slot #9 only (or in case of 1CPU configuration, #5)
3	NE3303-H001 (+ NE3303-H002)	External RAID Controller (1GB) (+ FBU)	Can install to Slot #5, #8, #12 and #16 only
4	NE3390-158A NE3390-157A NE3390-154	Fibre Channel Controller (16G/ 2port) Fibre Channel Controller (16G/1 port) Fibre Channel Controller (8G/2 port)	Can install to any slot other than Slot #8 and #9
5	NE3390-153 NE3303-142 NE3303-H001	Fibre Channel Controller (8G/1 port) SAS Controller External RAID Controller (1GB, w/o FBU)	
6	NE3304-128 NE3318-H001F	10GBASE Adapter (SFP+/2ch) 1.1 TB PCIe SSD	Can install to any slot other than Slot #8 and #9
7	NE3304-133 NE3304-132 (2nd and more) NE3304-138 (2nd and more)	1000BASE-T Adapter (4 port) 1000BASE-T Adapter (2 port) 1000BASE-T Adapter (1 port)	

Priority of PCI Slots:

High

Low

PCI Slot	Number of Available Slots (per CPU configuration)			
	4	9	13	16
# 1	Y	Y	Y	Y
# 9	N	Y	Y	Y
# 8	N	Y	Y	Y
#16	N	N	N	Y
#12	N	N	Y	Y
# 5	Y	Y	Y	Y
# 2	N	Y	Y	Y
#14	N	N	N	Y
#10	N	N	Y	Y
# 3	Y	Y	Y	Y
#11	N	N	Y	Y
#15	N	N	N	Y
#13	N	N	Y	Y
# 6	N	Y	Y	Y
# 7	N	Y	Y	Y
# 4	Y	Y	Y	Y

NOTE:

- The 2nd RAID Controller will not be installed (out of BTO Configuration)

■RAS Feature Matrix (per OS)

(2/1)

RAS Features	OS	A2040b	A2020b	A2010b	A1040b	Note
CPU Core Predictive Failure Analysis (PFA)	EL6.4 x64 or later	Y	Y	Y	Y	*1
	OL6.4x64	Y	Y	Y	Y	*1
	2012/R2	Y	Y	Y	Y	*2
	2008R2	Y	Y	Y	Y	*2
	ESXi5.1	N	N	N	N	
	ESXi5.5	N	N	N	N	
Dynamic CPU Core De-allocation	EL6.4 x64 or later	Y	Y	Y	N	*1
	OL6.4x64	Y	Y	Y	N	*1
	2012/R2	N	N	N	N	
	2008R2	N	N	N	N	
	ESXi5.1	N	N	N	N	
	ESXi5.5	N	N	N	N	
Dynamic Memory Page De-allocation	EL6.4 x64 or later	Y	Y	Y	N	*1
	OL6.4x64	Y	Y	Y	N	*1
	2012/R2	Y	Y	Y	Y	*2
	2008R2	Y	Y	Y	Y	*2
	ESXi5.1	Y	Y	Y	Y	
	ESXi5.5	Y	Y	Y	Y	
MCA Recovery	EL6.4 x64 or later	Y	Y	Y	Y	
	OL6.4x64	Y	Y	Y	Y	*5
	2012/R2	Y	Y	Y	Y	
	2008R2	Y	Y	Y	Y	*5
	ESXi5.1	N	N	N	N	
	ESXi5.5	Y	Y	Y	Y	*5
PCIe Error Recovery / PCIe Error Handling	EL6.4 x64 or later	N	N	N	N	
	OL6.4x64	N	N	N	N	
	2012/R2	N	N	N	N	
	2008R2	N	N	N	N	
	ESXi5.1	N	N	N	N	
	ESXi5.5	N	N	N	N	

(2/2)

RAS Features	OS	A2040b	A2020b	A2010b	A1040b	Note
Static COPT; re-boot required (COPT Model)	EL6.4 x64 or later	Y	N	N	N	*7
	OL6.4x64	Y	N	N	N	*7
	WS2012/R2	Y	N	N	N	*8
	WS 2008R2	Y	N	N	N	*8
	ESXi5.1	Y	N	N	N	
	ESXi5.5	Y	N	N	N	
Dynamic COPT: Core Enabling (COPT Model)	EL6.5x64	Y	N	N	N	*1
	EL6.4x64	N	N	N	N	
	OL6.4x64	N	N	N	N	
	WS 2012/R2	TBD	N	N	N	
	WS 2008R2	N=>Y	N	N	N	*3*9
	ESXi5.1	N	N	N	N	
	ESXi5.5	N	N	N	N	
Dynamic COPT: Core Sparing (COPT Model)	EL6.5x64	Y	N	N	N	*1
	EL6.4x64	N	N	N	N	
	OL6.4x64	N	N	N	N	
	WS 2012/R2	N	N	N	N	
	WS 2008R2	N	N	N	N	
	ESXi5.1	N	N	N	N	
	ESXi5.5	N	N	N	N	
Memory Hot-ADD	EL6.5 x64	N=>Y	N=>Y	N=>Y	N	*1*9
	EL6.4 x64	N	N	N	N	
	OL6.4x64	N	N	N	N	
	WS 2012/R2	TBD	TBD	TBD	N	
	WS 2008R2	N=>Y	N=>Y	N=>Y	N	*6*9
	ESXi5.1	N	N	N	N	
	ESXi5.5	N	N	N	N	
PCIe Hot-Add PCIe Hot-Remove	EL6.4 x64 or later	Y	Y	Y	N	
	OL6.4x64	Y	Y	Y	N	
	WS 2012/R2	Y	Y	Y	N	
	WS 2008R2	Y	Y	Y	N	
	ESXi5.1	N	N	N	N	
	ESXi5.5	N	N	N	N	

Legend for OS

EL6.5x64	Red Hat Enterprise Linux 6.5(x86_64)
EL6.4x64	Red Hat Enterprise Linux 6.4(x86_64)
OL6.4x64	Oracle Linux6.4/UEK R2(x86_64)
WS 2012/R2	Windows Server 2012 and Windows Server 2012R2
WS 2008R2	Windows Server 2008 R2 SP1
ESXi5.1	VMware ESXi 5.1 update2, ESXi 5.1 update3
ESXi5.5	VMware ESXi 5.5, ESXi 5.5 update 1, ESXi 5.5 update2

NOTE:

*1 Please install the necessary module according to the documents; “Machine Check Monitoring Service User's Guide” “Capacity Optimization (COPT) User's Guide for Linux” They are additional modules for a specific kernel version.

*2 Please install spport kit (UPDATE module) in the EXPRESSBUILDER. With Windows Seamless Install, the necessary modules are automatically installed.

*3 Please install the necessary module according to the documents; “Machine Check Monitoring Service User's Guide” “Capacity Optimization (COPT) User's Guide for Windows”

*4 (intentionally blank)

*5 Uncorrectable error detected by memory patrol can be recovered, but error recovery for L1 cache is not supported.

*6 Please install the necessary module according to the document “MR HotA-add User's Guide for Windows”.

*7 As an option, if you install the necessary module acccording to the documents; “Machine Check Monitoring Service User's Guide” “Capacity Optimization (COPT) User's Guide for Linux”, then, core allocation among CPUs can be adjusted. They are additional module for a specific kernel version.

*8 As an option, if you install the necessary module according to the documents “Capacity Optimization (COPT) User's Guide for Windows”, core allocation among CPUs can be adjusted.

*9 Planned to be supported in CQ1/2015

Copyright Notice and Liability Disclaimer

The information contained herein is subject to change without notice.

Microsoft and Windows Server are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries

Intel and Xeon are registered trademarks or trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Linux is a trademark of Linus Torvalds.

Red Hat is a registered trademark of Red Hat, Inc. in the U.S.

All other products, brands, or trade names used in this document are trademarks or registered trademarks of their respective holders.

NEC shall not be liable for technical or editorial errors or omissions contained herein.

For hard drive capacity measurements, 1 GB = 1 billion bytes. Actual formatted capacity is less.

Revision History

Revision	Date	Description
1.0	February 2014	Initial Release
2.0	April 2014	Updates
3.0	June 2014	Updates (RAS Feature Matrix)
4.0	July 2014	Updates (Windows Server 2012 R2 supported)
5.0	September 2014	Updates (4TB support)
6.0	October 2014	Updates (RAS Feature Matrix)
7.0	December 2014	Updates
8.0	April 2015	Updates